The Builder.

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Perrot and Chipiez' "Primitive Greece."

THE authors of this large and rather rambling book,* which now appears, like its predecessors of the series, in an English translation, have in their previous treatises on various chapters of ancient art always kept before their minds Greek art as the goal towards which they were tending. As yet, they say by a rather happy metaphor, we have seen Greece "only in profile and from the outside," though some of their former works have led them to deal with art as late as that of the complete Greek epoch. They have now to retrace their steps chronologically, and follow the direct line of Greek art up to its commencement, in order to deal systematically with the subject, and trace out the history of the development of Greek art in a continuous manner. Accordingly these two rather formidable volumes, comprising together more than a thousand pages, are the prelude to the work on the complete art of Greece, and deal with the art of the archaic period, or what the writers distinguish in their sub-title as "Mycenian Art," so the translator gives it; we should have thought "Mycenæan" more correct. Whether the view of the authors is that the primitive art of Greece belongs to a time when Mycenæ was the central city of the peninsula, or whether, on their scheme, there are still other phases of primitive Greek art to be dealt with before we emerge into Greek art proper, we do not quite gather; but if primitive or early Athenian art is also to be the object of as large a treatise, the subject will swell to rather a formidable size. That the interest of Greek art, and the multiplicity of the subject, are almost endless, we quite agree, but that is exactly a reason why, in the treatment of it, prolixity and excursiveness should have been avoided. There is much that is very interesting in MM. Perrot and Chipiez' new volumes, but they are mercilessly lengthy and verbose, and contain a great deal which has little to do with the history of Greek art, even were it history at all, and not, as in some instances, pure conjecture, or with only just the slightest basis of historical fact or suggestion.

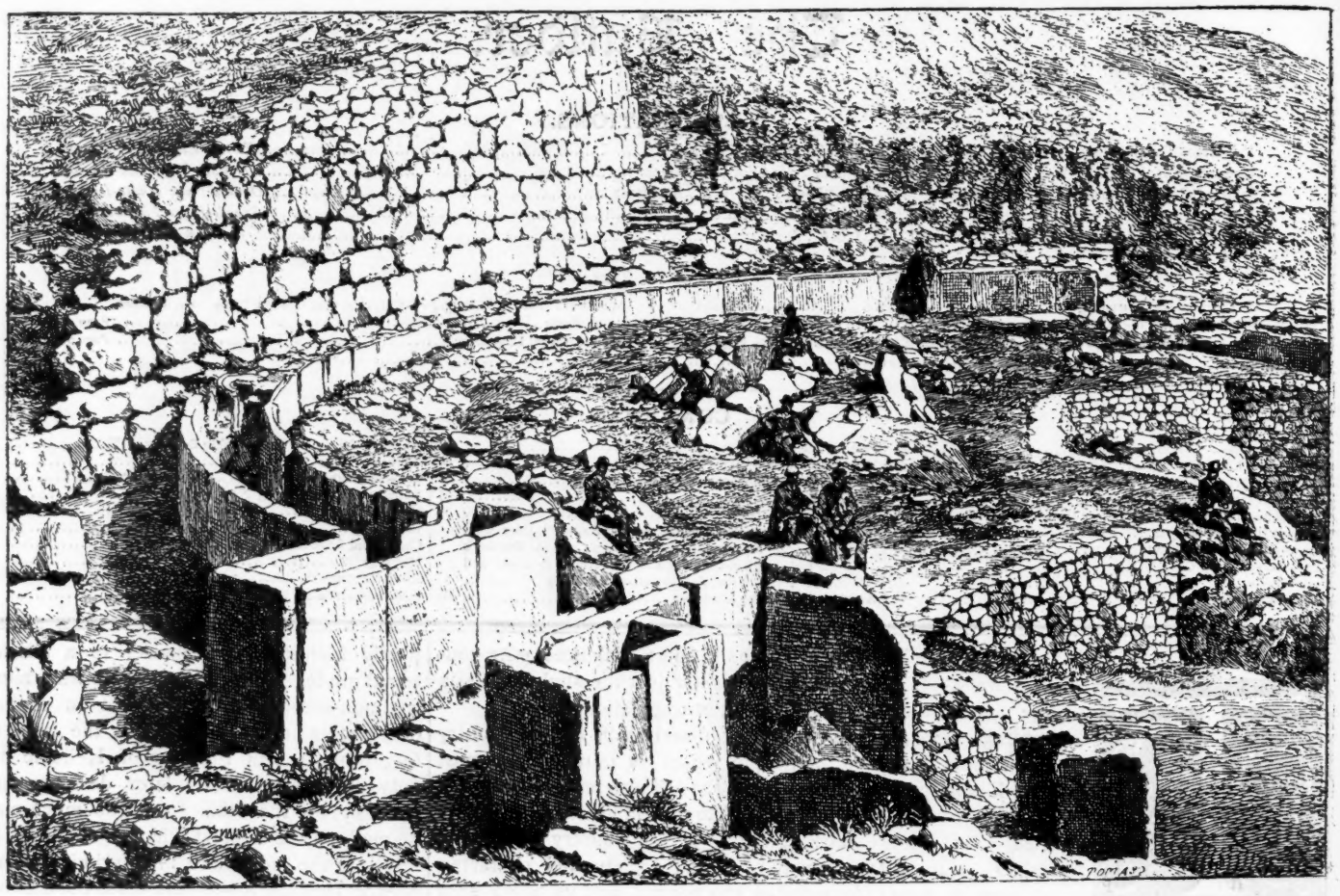
In their long dissertation on the country and the people, which we must, for the most part, pass over, the authors make some good points in regard to the influence of the nature and configuration of the country on the development of Greek society and character. The relief of the ground, and its being split up into fragments (in other words, we presume, the highly-indented nature of the coast of Greece) brought the *civitas* into being; in days when methods of locomotion were not very highly developed, the growth of separate small states, each dependent on its own capital city, was a natural result; had Greece been a flat plain, her social and political constitution might have been very different. The extent of coast-line, too, which brought so large a proportion of the inhabitants into direct contact with the sea, must have had a great influence, both on the physical characteristics and mental development of the Pelopennesians, who obtained, as Swinburne finely says of the Athenians—

> "Friendship and Fame of the Sea";

and the plenteousness of marble in the peninsula was undoubtedly, in another sense, an element in making Greek sculpture and architecture what they eventually became; the material must have actually influenced the art to a considerable extent. These are points in the authors' long and not very connected or symmetrical chapters on the country and the people, in which they appear to aim at making a complete philosophy of the genesis of Greek art from surrounding circumstances. Reflections of this kind are not without interest, for those who have time for them, but they do not prove much. As this treatise, however, is we presume, we will not say for "popular," but for general reading, rather than for scholars, the authors have done well in emphasising the fact, recognised now by all students of Greek art and history, that Greeks and Greek art had their barbarous period; that the reader must make an effort to realise that there was a time when the Hellenes were mere savages; "the tribes whose manners and daily life we may guess from the lower strata of dwellings at Hissarlik and Tiryns, must have greatly resembled those which modern travellers found settled in the islands of the Pacific; the implements of both are nearly identical, and answer to a similar social grade." This, of course, is what mere common-sense would lead one to expect, only people are a good deal in the habit of forgetting it, and thinking of Hellenic art only as it was in its later development. Possibly, on the other hand, too much may be made of the interest which is supposed to attach to the rudest and most primitive idols of early Hellenic make; and when the authors ask the readers whether their love of Greece "is great enough and deep enough to stand the test of accepting with reverence all that comes from her hand, finding nothing amiss as they listen, bent over her cradle, to the first babble of her genius," we are reminded how we once heard a learned archæologist solemnly inform his audience, at a meeting of the Hellenic Society, that So-and-so (we forget the name) "was believed to be the first artist who made a distinction in his works between the figures of men and women." This is surely going a little too far back in history for anything that can rightly be called "art."

In considering the localities of early Greek history, the authors commence with the island of Thera (now known as Santorin), and then proceed to devote a considerable space to Troy, or Hissarlik, for they use the names interchangeably, adopting the view that Hissarlik was really the site of the Troy of Homer, though admitting, of course, that there is little in common between this small citadel and the Homeric Troy, which they regard as a poetic embellishment of the real site. Many pages are occupied, to little purpose as it seems to us, in theorising upon this subject of the reconciliation of Hissarlik with the Homeric narrative; a question which has nothing to do with the main purport of the volume. The Homeric Troy was a purely ideal place; the Hissarlik ruins afford no adequate basis for it, and the speculation in this sense is an idle one. What is to the purpose is that in Hissarlik we have remains of a citadel or fortified hamlet going back to the earliest age of Hellenic history; and in this respect the authors give a very complete account of it, and a plan showing the relation of the remains of the three periods to which Dr. Dörpfeld has reduced Schliemann's seven strata. They give full consideration to Boetticher's necropolis theory of Hissarlik, and dismiss it rightly as untenable. The place was

* "History of Art in Primitive Greece: Mycenian Art." From the French of Georges Perrot and Charles Chipiez. London: Chapman & Hall. 1894.



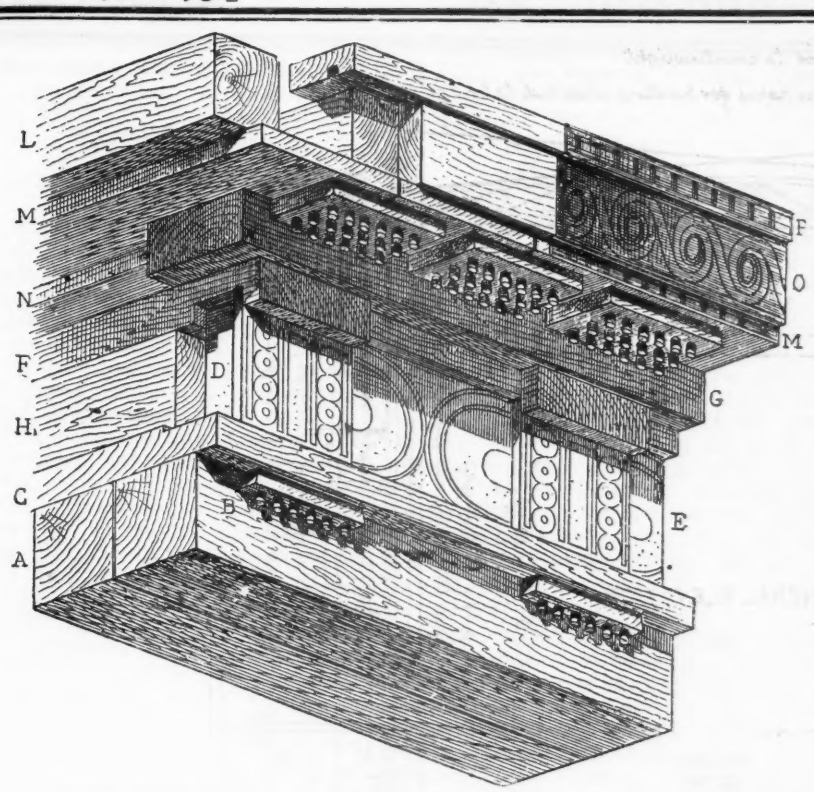
Slab-circle arouna Burying-ground, Mycenæ. From Perrot and Chipiez' "Art in Primitive Greece."

a place of the living, not of the dead. Apart from the mere hypothetical considerations as to Homer's Troy, the chapters devoted to Hissarlik form an excellent summary of the information gained, comprised within a comparatively short space. The authors next take us to Tiryns, which is very fully described and illustrated, and thence to Mycenæ. In regard to the double circle of slabs surrounding the burial-ground discovered by Schliemann, the authors apparently evade the question as to the reason for this singular fence of two walls of slabs in concentric line, accompanied by remains of horizontal slabs secured by mortising. They say "the intervening space between them was filled with earth and rubble; and the slabs, which are now the only remaining part of the erection, formed the lining to both sides of the wall, whilst the covering units prevented outward thrust"; but it is difficult to judge, from the manner in which the observation is introduced, whether or not this is intended as an assertion in regard to the original construction of the wall, or a description of the state in which it was found. In any case, some attempt should surely have been made to explain this construction of double rows of slabs, so different from anything found elsewhere in the pre-historic remains of Grecian construction. Was any filling found between the rows of slabs which appeared to have been an original filling, or were they only filled with rubbish and *débris* which had fallen in or accumulated? We should certainly have looked, in a treatise of this kind, for some theory or suggestion as to the intent of such a construction; and we look in vain. If this fence was intended merely as a fence, why construct it in that manner, when walls built in one thickness of rough-hewn blocks are found in immediate conjunction with it? There was a reason other than the formation of a mere fence for these concentric slab-walls; no one who looks at the drawing of them as they now exist can think otherwise; and it is, to say the least, curious that authors who are so much given to theorising on other matters, with far less basis for it, should pass over this peculiar feature as a matter of course, and without any really definite or intelligible description of the state in which it was actually found, or of the conclusions to be drawn as to its original construction and object.

In the description and illustration of the so-called Treasury of Atreus the authors are much fuller and more explicit, and this famous construction is very fully treated and illustrated, and in the second volume a fine restoration of the interior and of one of the portals, by M. Chipiez, is given; the interior is not an improbable restoration in appearance; in the portal we think M. Chipiez' fancy has run away with him considerably in regard to the amount and elaboration of the decorative detail. In the interior of the dome, the small holes found all over the surface have been taken as suggestions for a metal ornament inserted, which has been taken as a rosette, on the authority of an ivory comb, where such a form appears as an ornament between two sphinxes. This is going rather far afield for detail for the building, but it must be remembered that in archaic art we generally find a very few types of ornament which are constantly repeated, so that the suggestion is not without its probability.

In the restorations of Mycenæan architecture, however, the authors give full play to their fancy in the usual manner of French restorers. They have evolved a whole architecture, divided into first, second, and third epochs, out of the inverted column and its primitive entablature carved on the lion gate, and various bits of carved decoration from different sources. In regard to the entrance-portal of the Treasury of Athens there is a curious example of the off-hand manner in which fact and fancy are mixed up by French and German architectural restorers. In the drawing given of this doorway (vol. ii., plate iv.), labelled "Present state of façade, after Fr. Thiersch," there is a capital, and a small portion of an inverted column with a zigzag ornament, shown on the left of the doorway. But a page or two further on we read, "The capitals are gone, but the position which they occupied is so well determined that M. Thiersch did not hesitate to introduce one of the capitals in question in his sketch entitled *Present State*. We have followed his example" (!). That is certainly one way of getting materials for a restoration. The bases of the columns exist, and are shown as tapering the wrong way, as in the column on the lion's gate; but after what we have just quoted one is led to ask, is this a fact, or is this only the way M. Thiersch or M. Chipiez think they probably were? The authors should have given an illustration of the remains from a photograph; that is the only form of book illustration which is worth much in an argument of this kind. As to the elaborate drawings of the several epochs of Mycenæan architecture, the production of them has no doubt been a very interesting kind of study to their author, but except as to the form of various small details of ornament which have been discovered, they are mere fanciful conjecture; they are shown in fine plates, which are an ornament to the book, but we cannot see that this kind of production has much to do with the history of Greek art. The disadvantage of these fanciful restoration plates is that, though the reader who knows what is the extent of actual material on which they are based is not carried captive by them, and merely regards them as an interesting form of architectural recreation, it is not so with the less-informed class of readers, who are apt to suppose that elaborate designs, labelled "first epoch," "second epoch," &c., and made out in all their details, must be based upon actual knowledge; and so fiction gets mistaken for and accepted as fact.

We feel more interest in M. Chipiez' restorations of the general aspect of Mycenæ, of which two views are given. Here we are not asked to accept on faith such a quantity of detail as appears in the restored drawings of separate buildings; it is the general aspect of the ancient walled town, so great in its historic name and associations, so small in its area compared with a modern city, which it is endeavoured to revive; and there is something in this sketch of the place, with the mountain overshadowing it, which appeals strongly to the imagi-



Wooden Entablature of Mycenæ: as Restored by MM. Perrot and Chipiez.

nation, and seems for a moment to bring us back into the Homeric world.

The most interesting chapter in the book to architects is, or ought to be, that in which the authors' attempt to settle no less a question than "the origin of Doric architecture," on the basis of various points in Mycenæan remains. But, unfortunately, we find the old logical fallacy, so familiar to all students of French architectural books, by which constructions which have been evolved mainly out of a process of theorising on a clever manipulation of a few facts, are, in turn, treated as facts, and used as the basis to build a fresh theory on. Having evolved three epochs of Mycenæan orders, with entablature and details complete, to their satisfaction, the authors proceed to give enlarged details of their own restored construction, showing the whole process of mortising and the application of wooden pegs to hold the pieces together. They produce a piece of an alabaster frieze with some decorative design on it: this is an actual find of Schliemann's, and may be probably assumed to have occupied the place of a frieze, that is to say, a continuous wide band of ornament running along the top of some construction. The authors then show, in the plate referred to, how all the treatment of the various wooden portions of the entablature (their own invention) is exactly suited to hold up and keep in its place an alabaster frieze of this description. Then we have a drawing of the complete entablature with the alabaster frieze fixed in it, and then comes the crowning triumph of the argument: when we take an early Doric entablature, such as that of one of the temples at Selinonte, we find (*mirabile dictu!*) that all the parts, except the triglyphs and metope sculpture, exactly represent the authors' wooden Mycenæan entablature, evolved out of their inner consciousness by a process of shrewd and acute reasoning. It is really wonderful; such a remarkable tribute to their insight and perception! Only, is not this triumphant result just a little discounted by the fact that the authors knew all about the details of the Selinonte entablature beforehand, and had only to work up to them? The idea of going through all this inductive argument, as if it were on perfectly abstract grounds, and then producing at the end of it the illustration of the stone entablature to which they have been leading up as a foregone conclusion, has, at all events, the merit of unconscious humour.

That there is a great deal of cleverness in the working out of the imaginary wooden details and construction of the Mycenæan architecture we willingly concede, and it may be taken as affording some new suggestions as to the manner in which the Doric stone entablature evolved itself from a wooden construction, if it did so evolve itself. Although, in common with most writers on the subject, we consider its wooden origin highly probable, or perhaps something more than probable, it is just as well to remind people that it is not *proved*, and that there is still room for a difference of opinion on the subject. It is unlikely that anything will be discovered now which will render it absolutely certain, or will explain exactly the stages of the transition from wood to stone, because for that we want remains of the intermediate wooden constructions, which have all perished. MM. Perrot and Chipiez have endeavoured to supply an intermediary stage, and in a manner which is very ingenious, but while giving them full credit for that, let it be borne in mind that it is absolutely nothing but theorising.

There are two or three points in the theory, moreover, which seem to call for special comment. We have already referred to the rather small basis on which the authors have imagined a whole architecture of what we should call inverted columns—*i.e.*, columns with the thicker end uppermost. Now, confining the matter to the Mycenæan architecture, is it even so certain that the carved column on the lion gate, which is the chief fact we have to go upon, is after all a representation of a column and an entablature? Is it not possible that it represents something in the nature of an altar, for which the support might be in a special shape? Is it not rather improbable that a columned architecture would be represented in sculpture by a *single* column? And is it not in accordance with constant practice in antique sculpture, medals, or paintings, that two symbolic animals are represented on each side, not of a building, but of an altar or sacred symbol of some kind? There seems to us to be quite as much probability in this view of the lion gate sculpture as in that which regards it as a representation of the architectural columnar "order" of the period. But supposing this is not so; supposing that we accept the Mycenæan inverted column as the common form of support in the Greek architecture of that date and neighbourhood, we should like to know what becomes of it in the Doric period. If we are to accept the authors' theory, that the Doric entablature is derived from a Mycenæan wooden entablature, why was the inverted column not accepted also? Why are we to suppose that there was continuity of development in the entablature, and not in the column? This is a point which seems quite to have escaped the authors in considering the "origin of Doric architecture," in which the column, æsthetically, is even more important than the entablature; and if they wish us to believe that the Doric entablature was derived from their Mycenæan entablature, they must either explain away their inverted Mycenæan column, or they must explain what became of it in later times. Another point to be noticed is in regard to the pegs which are given in the imaginary Mycenæan entablature as the origin of the *guttæ*. While the authors are looking for the *guttæ* in a purely imaginary piece of construction of their own, they have overlooked a fact bearing on the point in one of their own illustrations. On the chromolithograph plate facing page 225 in the second volume is an illustration of a dagger with the hilt ornamented with circular studs of exactly the shape and proportions of the Doric *guttæ*, showing even the characteristic thickening out towards the extremity of the projection. As the authors have built so much, in other parts of their book, on stray bits of ornament found in isolated objects, it is odd that they should have overlooked the suggestion in this dagger hilt.

There is a great deal of information on other points summed up in the book, on stone implements, early statues and idols, metal-work (a very good chapter), representations of the figure, &c., and though it is all mingled with a good deal of fancy and theorising, there is something of interest to be found in most chapters of the book, and the number of illustrations adds very much to its value. We regret that the translation presents the same defects to which we have already called attention in the English editions of previous works of the series by the same authors. Bad grammar is frequently met with (*ex. gr.*: page 8, "these types owe to their noble character and infinite breadth to have outlived the old world and of imposing themselves on modern plastic art"); and the translator still indulges the bad and clumsy practice of translating (?) French technical words which he does not understand by simply writing the same word in an English form. Thus we have "plat-band" (*plate-bande*), an expression which has no existence and no meaning in English, and we are told that one detail has a "gauffred-like appearance," and we read of "necropoles" and "acropoles." Achilles is always spelt "Achylles;" Pnyx, on the other hand, by an opposite mistake, is written "Pnix;" and we have "Selinous" for "Selinus." All this is very careless and clumsy; such blunders, though they do not affect the main value of a book, are great blemishes in a handsome and costly publication, and the publishers would do well on the next occasion to get some one with a better knowledge of English and of architectural terms, to correct the vagaries of their translator.

AN AMERICAN LIFTING BRIDGE.

IT will be remembered that the design for the new bridge over the Thames near the Tower of London was only selected after the most careful consideration of the various schemes for affording additional facilities for crossing the river at this point. Great differences of opinion existed as to the most desirable manner of providing further means of communication between the two banks of the river, the solution of the problem being made especially difficult owing to the important shipping interests involved, and it was not until the merits and defects of many proposals were fully examined, that it was decided to construct the bascule bridge, which has so recently been completed. The bridge has now been in use for one year, and the manner in which it has ful-

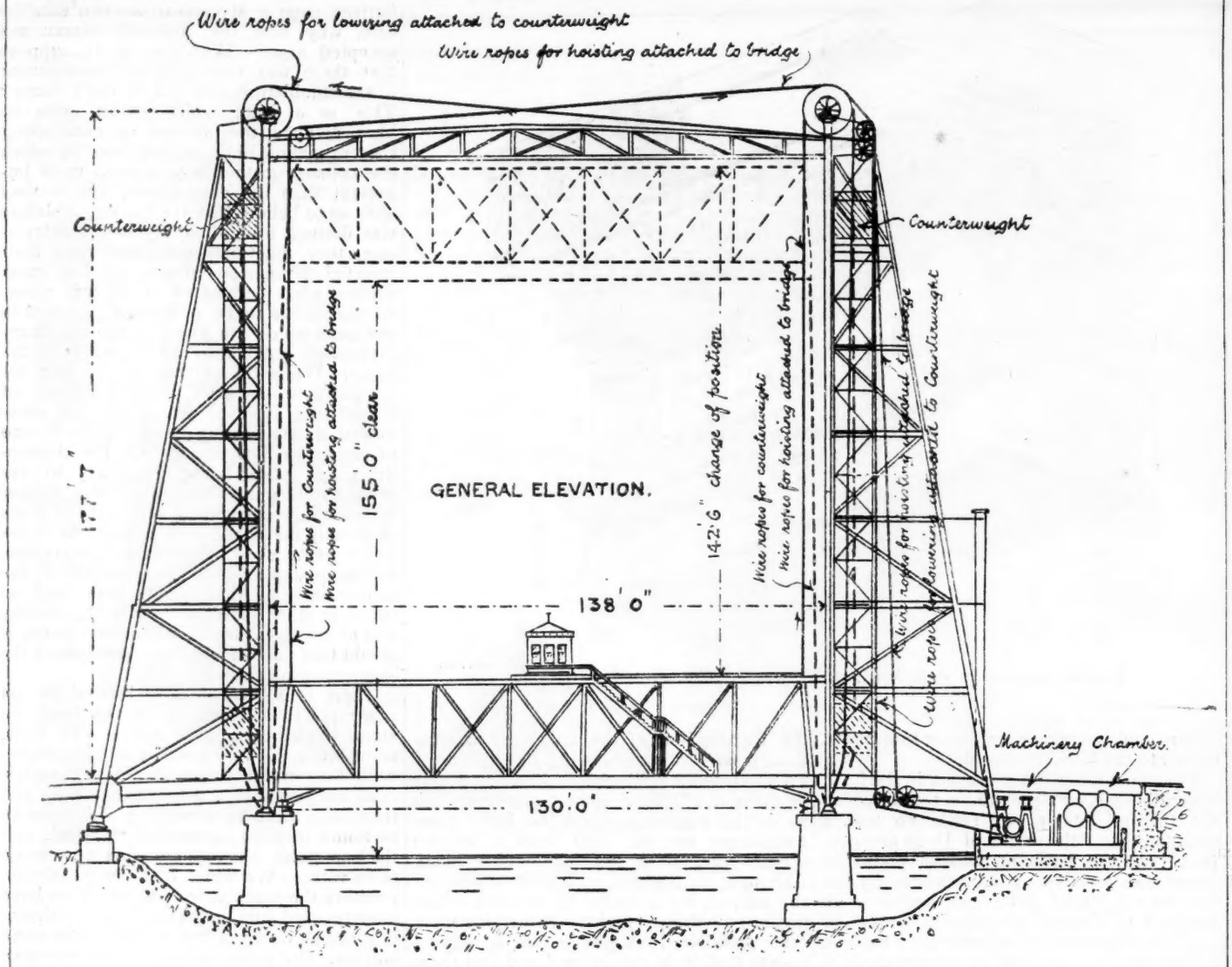


Diagram of Lifting Bridge at Chicago. Mr. J. A. L. Waddell, Engineer.

filled the expectations of those responsible for its construction, leaves nothing to be desired.* In fact, it must be confessed that, with regard to accommodating both the river and road traffic, the bridge has worked even better than its most sanguine advocates had anticipated. The process of opening and shutting the central span to permit vessels to pass through the bridge is performed so rapidly, that it has been found unnecessary to use the hydraulic lifts for conveying passengers to the high-level footways, it being generally quicker to wait at the lower level until the operation of allowing a ship to go through is completed. The maintenance of such a structure is, as might be expected, a very heavy expense, it being necessary to employ a large number of men to attend to the machinery, and for other purposes connected with the efficient working of the bridge, but this outlay, as well as that incurred in carrying out a somewhat elaborate and difficult piece of work, is not a very important matter when considered in conjunction with the absolute necessity of dealing with the enormous traffic in the best possible manner.

Much attention having been given to this subject, it is interesting to observe the efforts of others to overcome the difficulties we have ourselves experienced, and an excellent opportunity of doing this is given us by Mr. J. A. L. Waddell, who recently read an interesting paper before the American Society of Civil Engineers on a bridge he has lately constructed over the river at Chicago.

This bridge has been specially designed to offer the minimum obstruction to vessels, while at the same time affording a means of crossing the river for both vehicular and pedestrian traffic. As will be seen from our illustration, the bridge consists of one span, 130 ft. in length, designed to carry a double-line tramway, as well as vehicles and foot passengers. The roadway has a clear width of 34 ft., and the footways, which are each 7 ft. wide, are carried along the outside of the main girders. This span is so constructed and supported as to permit of being lifted vertically to a height of 155 ft. above mean low water, thus allowing all kinds of vessels to pass beneath it. When the bridge is in its lowest position, that is, when ready for the road traffic, the clearance afforded above the water level is 15 ft., and this is generally found sufficient for ordinary purposes.

The complete weight of this span is 290 tons, and the manner in which it is raised and lowered is briefly as follows. On either side of the river a strong steel tower has been constructed, 217 ft. in height, and on the top of these are placed four built-up steel and cast-iron sheaves, 12 ft. in diameter, supported on 12-in. axles. Eight steel-wire ropes, $1\frac{1}{2}$ in. diameter, are connected to each end of the main girders of the moving span, and passing over the sheaves above mentioned, are attached to cast-iron weights, capable of moving vertically between guiding frames fixed to the towers. This loading is just sufficient to counterbalance the weight of the span, and is therefore about 290 tons, so that the total weight of the moving mass, including ropes, may assumed to be practically 600 tons.

Each tower consists of two vertical and two inclined legs, thoroughly braced together, the former acting as guides for rollers attached to the moving span, which is thus steadied both longitudinally and transversely. Light steel lattice girders connect the tops of the towers together and form a gangway for the men in attendance.

The lifting machinery consists of two 70 h.p. steam-engines, communicating power to an 8-in. horizontal shaft, carrying two spiral grooved cast-iron drums 6 ft. in diameter.

In addition to the $1\frac{1}{2}$-in. diameter ropes mentioned above, there are eight others $\frac{7}{8}$ in. diameter which are attached to the ends of the main girders and used for raising and lowering the bridge, which operation can be effected in about half-a-minute. In order to prevent any sudden jar owing to the motion of the span being checked too quickly, hydraulic buffers have been fixed both at the foot and the top of the towers. Besides the steam-lifting machinery, there is a man-power operating apparatus of simple design, which, when used alone, is capable of slowly opening and shutting the bridge. In order to secure a correct balance, water tanks are attached to the span. These also provide a quick and efficient means of raising and lowering the span in case of a breakdown of the machinery, since by regulating the quantity of water in these tanks the span could be made to ascend or descend as required.

The bridge appears to have worked well since it was opened, and is said to give better satisfaction to both navigation interests and to the general public than any other bridge over the Chicago river, although the cost of maintenance is rather a formidable expense. Its total cost, including approaches and machinery-house, was about 40,000*l.*, but owing to the previous want of experience with structures of this kind, this price is probably a little more than that which a similar bridge could now be made for.

On one occasion, owing to the main driving pinions on the crank-shaft of the engine breaking, the span remained at the top of the towers for a period of thirty-six hours, until the repairs were completed, and the bridge again put into operation; but this appears to be the only instance of the traffic being seriously interrupted.

* We are here speaking of the bridge, of course, purely as an engineering work, and without any reference to its "design" in the architectural sense.

The only other bridge of this kind was built some ten years ago for the purpose of carrying a double line of railway over the Erie Canal at Syracuse, N.Y., but the time which has elapsed since its construction and the building of the present bridge would seem to indicate that engineers are not very much in favour of this type of construction. As is well known, the life of steel-wire ropes, which are continually subjected to the reversal of stress, caused by passing over pulleys, is not of very long duration, and in the case of the Chicago bridge, where there is some 14,000 lineal feet of such ropes, the expense attending their renewal will be very considerable.

In the discussion which followed Mr. Waddell's paper on this bridge, it was pointed out by several engineers that the great difficulty experienced with bascule bridges is that of securely fixing the roadway to the moving leaves, so that when these are swung from a horizontal to a vertical position the roadway is not affected.

No trouble has, however, been experienced in this respect at the Tower Bridge, where wooden blocks are used for forming the roadway over the bascule portion, as well as along the side spans and approaches. These blocks are tenoned together and securely screwed down to greenheart planking, which is rigidly fixed to the steelwork, and after being in continual use for twelve months they appear to be in as good condition as when first laid down.

It appears that several other bridges on the same principle as Mr. Waddell's are now being designed for various places in America, but we do not think this system is likely to find much favour with us, especially as it has now been demonstrated that a bascule bridge so successfully meets the requirements of both road and river traffic.

NOTES.

THE recent appeal for funds towards the repair and making safe of the west front of Peterborough has unhappily been quickly followed by a similar appeal in respect of another great Mediæval monument of equal importance, and one in which there is perhaps a stronger popular interest. Salisbury spire is evidently in serious danger. We reprint on another page Sir Arthur Blomfield's report, which was communicated to the *Times* of Saturday last, accompanied by a letter from the Dean of Salisbury to the effect that the funds officially available are as inadequate as the substructure of the spire appears to be. Sir Arthur Blomfield estimates the cost of the repairs which are absolutely necessary to render the tower and spire safe as probably about 5,000*l*. Towards this the Cathedral authorities have only the prospect of being able to supply 1,300*l*. in two years. It is evident that delay will be dangerous, that the work of repair ought to be begun at once, and that it is imperative that the funds should be found. Many persons, we are quite certain, will agree with us that in the case of a monument of such national importance as this, public money ought to be forthcoming if the funds cannot be obtained through private liberality. In France this would be the case almost as a matter of course, for the French, though they "restore" their ancient architectural monuments too much, at all events appreciate their national importance, and do not grudge the employment of public money in repairing and preserving them. It is high time that this example were followed in England, and that our Government should recognise that great architectural monuments of the past are a part of the most precious possessions of the nation, and that a duty to posterity lies upon us to preserve them from ruin. The loss of Salisbury spire, through want of money to pay for the work necessary to ensure its safety, would be not only a national misfortune, but a national disgrace.

WITH the General Election, from a political point of view, we have nothing to do. But it is important to note the attitude and fate of the so-called Independent Labour Party. This party must be regarded really as a Socialist labour party, and it is clear that it has no real hold of the bulk of the working-classes. Its candidates have polled a very small number of votes compared to those given for the two main political parties. Those who are most active in connexion with this party are also prominent in expressing the views of the labour party in the press. The absolute defeat of this party at the polls seems to show that the anti-capitalist attitude of the most extreme of the advocates of the workingman does not meet with the sympathy of the bulk of the working-classes. We hope that this is indicative of the fact that more cordial relations exist between employers and employed than labour orators are apt to suppose.

THE "Journal of the Institute of Architects" (No. 17) contains an account of a deputation to the Bridges Committee of the London County Council on the subject of the new Vauxhall Bridge. The deputation consisted of Mr. Waterhouse, Sir A. Blomfield, Mr. Brydon, Mr. Caröe, Mr. Romaine-Walker, and Mr. Mountford. They laid before the Bridges Committee drawings showing the design prepared by the Art Committee of the Institute for the new bridge, and sanctioned by the Council of the Institute. Mr. Waterhouse explained that they desired to interfere as little as possible with the design for the ironwork prepared by the engineer to the County Council, but they had increased the width of the stone piers from 12·6 ft. to 17 ft., as they considered this width necessary to give the bridge a sufficiently monumental appearance; and they corbelled out the footpath, partly to reduce cost, partly to give a sufficient degree of shadow on the ironwork beneath. This is a doubtful arrangement. The Art Committee propose to reproduce "in a somewhat more solid shape" the characteristic design of the balustrade over the existing bridge, and certainly it is well worth reproducing, but it will have a very different effect when placed on a corbelled-out footpath from what it has on the present bridge, where it is the finish, perpendicularly, of the bridge design. The Committee also suggested that Portland stone might be used above the water-line instead of granite, as more pleasing in appearance as well as more economical. As the homogeneous character of the bridge as a whole is already destroyed by the introduction of iron, it does not seem to be of much consequence if the homogeneous character of the piers also is destroyed. Such a structure as is intended can never be monumental, and the corbelling out of the footpath will make it even less so than it might have been. The Chairman of the Bridges Committee feared that the Conservators of the Thames would never allow the proposed increase of width in the piers. Are the Conservators masters of the situation? It seems rather odd that they should be supposed to have absolute power in regard to such a matter as the design and construction of the piers of a bridge.

THE work in the 1895 National Competition of Schools of Art is at present exhibited at South Kensington, in the iron building adjoining the Machinery Section, Southern Galleries, Exhibition Road. It is an interesting collection, which shows the sort of work that the examiners consider worthy of reward, but the excellence varies considerably, from a few good things to a considerable number which are of very commonplace character. The exhibits comprise specimens of modelling in all its branches, drawing from the antique figure and from the living model, figure-painting from the nude and from the antique cast, painting from still life, and ornament in monochrome. There are also many designs for textiles, laces, carpets, hangings, drapery, wall-papers, internal decoration, stained glass, historic ornament, pottery, tiles, ironwork, and book illustrations. As usual, architectural design is not well represented in the "National" competition, the results of which are exhibited at South Kensington, and the strictures on the work which appear in the report of the judges, Messrs. Aitchison, T. G. Jackson, and J. J. Stevenson, appear to be fully deserved. The work of Mr. Charles Quennell, of Lambeth, is awarded a gold medal; this design for an art gallery appeared in last year's competition for the Soane Medallion. The planning appears to be crude in its arrangement, and the interior decoration is remarkable in character and out of scale. There are some good points about the elevations. Mr. A. H. Hodge, of Glasgow, has received a silver medal for his design for an Art Garden; the drawings show considerable imagination of and a feeling for colour, but the design as a whole represents a most impossible piece of architecture. Mr. E. F. Reynolds takes a silver medal for a design for a river-side warehouse, to which one turns with much pleasure. The work of Mr. T. A. Williams, of Chester, also well deserves a silver medal for a design for a memorial church. Architectural sketches are well represented by Mr. G. H. Lenferty's work, holiday sketches in Normandy and Brittany, which receive a gold medal. Mr. R. I. Beale takes a bronze medal with some interesting sketches of a Jacobean pulpit. Mr. Beale shows considerable perception of light and shade, and in this respect his work is good. Architectural drawings from measurement of actual work comprise some rather ordinary work, from which Mr. J. T. Walker's drawings of St. Mary's Church, Banbury, have been selected for a silver medal. The architectural work as a whole does not arouse our admiration to any extent, and if the work exhibited here is representative of the South Kensington methods of teaching architecture, the sooner those methods are improved the better. Space permits only brief reference to objects in other departments of the exhibition. Mr. G. J. Carder exhibits a picture-frame of oak, with white gesso decoration, which deservedly receives a silver medal; another is flanked by book-cover with gesso decoration, which receive bronze medals; these are capital designs and worth study. Mr. Charles Lawford, of Leicester, exhibits an excellent design for a Brussels stair carpet, which has received a silver medal; we should like to see Brussels carpets of moderate price and equally good design more easily obtainable. The rest of the exhibition contains work of varying excellence. The architectural section of this exhibition seems to contain the least satisfactory work.

THERE are so many buildings in London and other large cities which depend for their stability upon a metal framework, that experiments carried out with a view to ascertain the effects of a fire upon the iron or steelwork of which they are composed cannot fail to be of very great interest to all who are responsible for structures of this character. Experiments were made a short time ago at Vienna, under the supervision of the City Surveyor, with the object of testing the efficiency of various building materials against fire, and also to ascertain what protection they were capable of affording to ironwork. To make these tests a brick chamber some 12 ft. by 8 ft. in plan and 11½ ft. high was built, and in the centre an iron column was constructed consisting of two channel-bars, 5½ in. by 2¾ in. These channels were placed 2½ in. apart, back to back, and were braced together with light lattice-bars. Within the space between the channels test-bars, composed of various alloys melting at temperatures between 150 deg. Fahr. and 1,650 deg. Fahr., were placed, the column afterwards being

surrounded with brickwork in mortar, thus forming a pier some 18 in. square. In order that the test should as nearly as possible resemble the conditions met with in actual practice, the column was loaded with a sufficient weight to cause a stress of 3¼ tons per square inch on the ironwork. Fuel was then strewed over the floor of the chamber to a depth of some 3 ft., and the firing was fully maintained for a space of 2½ hours, and was subsequently extinguished by the fire brigade. The heat had, however, been so great that it was not until the next day that a thorough examination of its effect could be made, but it was then discovered that although the edges of the brickwork pier were crumbled to an extent of 1½ in., the iron column was quite uninjured, and only the test-bar, capable of fusing at 150 deg. Fahr., showed any indication of melting. It would thus appear that the brickwork was of ample thickness to protect the ironwork, and that when such construction is adopted in actual practice a building is probably as fire-proof as it is possible to make it.

THE demolitions that have been made in course of the past few years in Austin Friars will shortly be followed by the removal of Nos. 10, 11, and 6½. These stand on nearly 5,000 ft. super., with a frontage to Austin Friars-square, of which they form the west side. Nos. 10 and 11, built of red brick, afford good plain examples of the genuine Queen Anne style. The former has a date "1704" on the rain-pipe; it is entered by a flight of steps, the wide and handsome staircase is panelled, and has a painted ceiling; No. 11, also gained by steps, is distinguished by a carved doorway. Close by is the site of the old mansion, with its terraced garden, which belonged to the Dutch trader Herman Olmius, or Van Olm (1705-18), and his younger daughter's descendants by her marriage with Adrian Lernoult,* to the demolition of which we adverted in a "Note" on March 3, 1888. The removal of No. 36, Bishopsgate-street Within, will give opportunity for improving the approach into Great St. Helen's; it is, perhaps, a contemporary of the house, Crosby Hall Chambers, which has been supplanted by the nearly completed premises which have been built by Messrs. Colls & Sons, after Mr. W. Gwyther's designs, for the Bank of Scotland. The inner front of the Chambers had an elevation of a rustic ground floor, with pilasters on the first floor; a design that has been attributed to Inigo Jones and is illustrated in the Rev. Thomas Hugo's "Itinerary of the Ward of Bishopsgate," 1862. We are informed that in the new building will be preserved the fine Jacobean chimneypiece of stone and carved wood, bearing in its central panel, the initials and date "G. B., 1633."

THE painting by Holbein, which it has been stated the Barbers' Company are willing to sell for 15,000*l.*, will shortly be deposited for public inspection in the Guildhall Art Gallery. It now hangs, together with other notable pictures, in the Company's Court Room, or Parlour, an apartment that was built *circa* 1636, after Inigo Jones's designs, but suffered some damage in the Great Fire. The Livery Hall was pulled down some years since; its stone doorway, by Jones, was, however, refixed in the new gateway. Thirty years ago the Parlour was redecorated under the superintendence of Mr. C. J. Shoppee, who constructed the lantern-light in place of the cupola that had been erected in or about 1752, and was again decorated in 1878 by Mr. C. Herbert Shoppee. The famous picture, executed on a gilt ground, on oak panel, represents King Henry VIII. in the act of committing to Thomas Vicary, Master, a new charter for uniting the Chirurgeons and Barbers in one corporation, 1541. It contains portraits of several celebrities, amongst them being Dr. Butts, Dr. Chamber, Warden of Merton College, Oxford, Dean of St. Stephen's, Westminster, and principal physician to the King; James Mumford, "King's Surgeon"; Nicholas Symson and Edward Harman, "King's Barbers"; and Sir John Ayliffe, whom Edward VI. knighted—he also was a "King's Surgeon." The silver-gilt Grace cup and cover, with four pendant bells, given by the King in celebration of the event, is considered by many to display the influence of Holbein. The Company possess the copper-plate, by Bernard Baron, of the picture. They paid him 150 guineas (1735); impressions of the plate were sold by T. Bowles at half-a-guinea each. For some of the foregoing particulars we are indebted to an account written by Mr. C. J. Shoppee, some time the Company's architect and surveyor, and Master in 1878.

* See Mr. Philip Norman's "London Signs and Inscriptions." 1893.

WE heard of an amusing instance the other day of the way in which some of the public regard the work of an architect. A lady who thought of building called at a publishers to procure a book on dwelling-houses, and having found a book of designs and plans by an architect, which was much to her satisfaction, stated her intention of calling on the author of the book to talk to him further about the proposed house. A doubt as to the *modus operandi*, however, flitted across her mind, for she turned back as she was leaving the shop with the question—"Does Mr. —— make them himself, and send them into the country?"

DANGEROUS STATE OF SALISBURY TOWER.

THE following is Sir Arthur Blomfield's report on the serious condition of Salisbury spire, or (to speak more correctly) of Salisbury tower, for, as will be seen by the report, the real failure is in the masonry of the tower; the spire, in itself, we believe, is in good condition, but the collapse of the tower would involve the ruin of the spire, the thrust of which is also partly the source of the danger. The report was communicated by the Dean of Salisbury to the *Times* of Saturday last, and has no doubt been seen by many of our readers, but it will be well to put it on record in our columns for future reference:—

"SALISBURY CATHEDAL.

June 29.

During the progress of certain minor repairs in the central tower it became evident that something was seriously amiss with the upper part of the two western stair turrets which required investigation.

A scaffold was accordingly erected round the north-west turret, from which a close and careful examination has been made, with the result that its state proves to be even worse than was feared.

A good deal of the external stonework is split and fractured and is in so loose and unsafe a condition that no assurance can be given of security from some serious disaster which might at any time occur. Certain cracks which are observable internally, especially one in the base of the spire at this angle, though they are certainly not altogether new, show indications of a slight recent movement which would inevitably become dangerously aggravated by any considerable fall of portions of the external stonework.

It is difficult to determine with certainty the precise cause of the present state of things in these turrets, but various adverse agencies have no doubt been gradually at work for many years past.

Of these the principal are, first, the numerous iron bands, rods, and ties which have been introduced from time to time, many of them in the most injudicious manner.

An attempt has been made to protect some of them with lead from wet and consequent corrosion, but this has in many places altogether failed and made matters worse rather than better. The next agents are wet and frost, which have gradually done much damage; and the third is to be found in the great thrust of the spire, which is continually active.

Nothing can be done to lessen or modify this last element of danger, but it is imperative to render the angle-turrets, which receive so much of it, as sound and strong as they can be made.

For this purpose any attempt at small repairs or patching would not only be useless, but positively dangerous. The work that is called for by the necessities of the case is emphatically not one of restoration, but of repair, which is absolutely essential for safety, and which to be effectual must be complete and thorough.

The greatest care, caution, and skill will be necessary in dealing with the damaged portions of both these turrets.

I should recommend the completion of the north-west turret first, to be followed immediately by the repair of the corresponding one on the south side.

It is impossible to give any accurate estimate of the cost of the work necessary to put these turrets in a sound and satisfactory state, but it will probably amount to about 5,000*l.*

ARTHUR W. BLOMFIELD, A.R.A."

The subject is likely to be of so much interest to our readers, and the problem of dealing with the weak angles of a tower with such a great superincumbent weight on it is such an awkward one, that we have asked Sir Arthur Blomfield if he can give us any information as to the means it is proposed to adopt to put the tower in a state of security. He has replied in the following letter:—

"DEAR SIR,—Referring to your inquiries as to my report on the state of the western angle-turrets of the central tower and spire of Salisbury Cathedral, a point has not yet been reached when a detailed description of the *modus operandi* is possible.

The present scaffold was only erected to provide a means of closer examination than was possible in any other way at certain points, and it is quite sufficient for that purpose; but before anything more can be done, or the precise means of dealing with a difficult and complicated undertaking can be decided, this scaffold must be supplemented and made strong enough to receive such shoring, strutting, and needling as may be found necessary. This preliminary will be the first thing which will occupy my attention.

With regard to subsequent proceedings, all I can say with certainty at present is, that my endeavour will be to avoid the use of iron altogether.

Wherever I find it possible I hope to remove the bars and plates which have done so much mischief in the past, and in future to rely on bonders and bonding courses of stone, which, if properly used and well joggled and dowelled, are in every way much more satisfactory and reliable.

You will, of course, understand that I do not refer to the great iron ties and bands of the tower below, but to numerous small rods, bands, and plates which I believe to have been introduced in the upper part of the angle-turrets in the time of Bishop Sherlock, that is about one hundred and fifty years ago.—Faithfully yours,

ARTHUR W. BLOMFIELD."

THE ARCHITECTURAL ASSOCIATION SUMMER VISITS:

III.—STANSTED MOUNTFICHET.

ON Saturday last a party of fifteen members of the Architectural Association, including the President, Mr. W. D. Caröe, journeyed, under the leadership of Mr. A. W. Earle, to Stansted Mountfichet, to inspect some of the works there carried out by Mr. Caröe. The heavy rain experienced had doubtless some effect on the numbers of the party, but owing to the kindness of the host, Sir James Blyth, Bart., covered carriages were provided, and met the visitors at Bishop's Stortford station. The first objective point was "Woodhouse," the residence of Sir James Blyth, and, after being refreshed by luncheon, the members inspected the additions made under Mr. Caröe, a part only of the clever design he has prepared, as well as the old house and subsequent additions. By taking advantage of the varied natural levels of the site, the architect has given the benefit of two virtual ground floors, the lower having the hall and dining-room for its principal features, and the upper providing the drawing-room, library, and billiard-room. One of the most striking features of Mr. Caröe's arrangement is the hanging partition which divides the dining-room when required, so as to form a cosy little room for a small family party. This partition is hung with counter balance weights, to which the addition of a small quantity of water gives a sufficient lifting power to raise the partition. When this water is run off the partition slowly descends.

The weather fortunately clearing somewhat in the afternoon, the party were able to proceed to the church, which has been entirely built from Mr. Caröe's designs, and the tower of which is now being completed. The church consists of chancel and chancel aisle, or chapel, nave and transept, a south aisle and western gallery. There

are many interesting features in the design, possibly too many, as one feels somewhat worried by a little too much fidget. This is particularly noticeable in the tower, by reason largely of the sharp contrast between the red brick and Weldon stone, a contrast which the softening hand of time and weather will reduce. The detail is based on a late phase of Perpendicular, and hardly escapes the thinness which is often characteristic of modern work so based. The men of the fifteenth century felt their work incomplete without colour, and a similar feeling seems to have inspired the architect of this building with the idea of using metal for the purpose. Bronze lions are thus dotted on the oak pulpit, and are some day, when a generous donor comes along, to be accompanied by bronze figures. So, too, the roof is intended to have oak angels under its trusses, and these angels have bronze, or rather green copper, wings. As a specimen and an incentive to the benevolent, the architect has presented the first and, up to the present, the only one of these angels. The colour-tone of the gun-metal lectern, made by Messrs. Singer, of Frome, from Mr. Caröe's design, is very pleasant. A happy effect is obtained in the internal stonework by the random use of Ketton, Casterton, and Bath, the varied textures and tints of which go a long way to minimise the deficiencies of Perpendicular; indeed, the interior is far more satisfactory than the exterior, a result to which the treatment of the stonework just mentioned, and the quiet tone of the open oak roof, largely contribute. We have spoken of the detail as based on Perpendicular, but Mr. Caröe is evidently a long way from being a purist, either in detail or in ecclesiology, as the credence is on the north side of the chancel and the piscina on the south, in a hagioscope. We have illustrated this building in our issues for August 10 and November 23, 1889, June 28, 1890, and August 29, 1891.

From the church a return was made to "Woodhouse," where the carriages were in waiting to convey the party to "Blythwood Farm," the famous dairy-farm which contains some of the finest and best bred Jersey cows and bulls in England. These were duly inspected and admired, as well as the Shire horses and Southdowns, but the buildings being adapted from old barns and other adjuncts of an arable farm were not to be regarded as models. In the middle of the show-yard, however, a pavilion has been erected from Mr. Caröe's designs, which furnished the architectural object of the visit to the farm. This is a simple but pleasing shelter for visitors on show-days, of white woodwork, large sheets of plate-glass, which it need hardly be said were not earnestly desired by the designer, and oak shingles with a red brick chimney through the apex of roof. A close earthenware stove with chimney mantel all round, forms the centre of the interior, and affords the architect a means of introducing some nice detail.

Returning to "Woodhouse," the stables were visited, which do not present features for remark, other than the use of white glazed bricks for lining, and the abandonment of the ordinary method of stable-door hanging in two heights, both of which afforded topics of discussion. The glass-houses were then visited as well as the engine and dynamo room which furnish the lighting of the house and other premises, as well as the motive power in the dairy. The dairy was the last thing visited, a charmingly-designed, luxuriously-fitted, example of dairy work. The dairy proper is below with two rooms, lined with Carrara marble, walls, ceiling and floors, and divided from each other by a plate-glass partition. An electric motor drives the separator and churn, and these were seen in operation. Above the dairy is a tea-room, luxuriously-fitted with oak joinery, India matting, lincrusta, and with a balcony all round. Here tea was provided for the visitors, after which the carriages conveyed them to the station, concluding a very pleasant day's outing, in spite of the adverse weather.

MONUMENT TO HENRI MÜRGER.

WE give an illustration, from a photograph, of the monument recently erected in the garden of the Luxembourg to the memory of Henri Mürger, mentioned in our last "Letter from Paris" (p. 5, *ante*). Mürger's principal work, the "Vie de Bohème," with its extraordinary and no doubt somewhat exaggerated sketch of the artist life of the Quartier Latin in old days, is well known to many English readers. The monument is the work of M. Bouillon, the sculptor also of the monument to Théophile Gautier at Tarbes.

Monument to Henri Mürger, in the Luxembourg Garden, Paris.—M. Bouillon, Sculptor.

ROYAL ARCHÆOLOGICAL INSTITUTE.

THIS Institute held its meeting this year at Scarborough as its headquarters, commencing proceedings on Tuesday, the 16th, when the Mayor received the visitors at the Court House in the Town Hall, and the Archbishop of York delivered his Presidential address, which did not deal with any special points in archæological study, but was merely, as he himself characterised it, a few reflections as to the general importance and interest of the study of the relics of past ages. Not only the historian, he observed, but the architect, the artist, and the mechanic, as well as the naturalist, the philologist, and the numismatist might be laid under great obligation by the investigations and researches of such a society as this. Yet there was something quite apart from the emotional experience which they were trying to analyse, the impression received, and the interest felt in the remains of antiquity, quite apart from the collateral bearing upon special pursuits. When they tried to examine the sensations produced by the contemplation of what was old, they would find that they arose not so much from the thing itself as from ideas associated with it. If, instead of an abbey, a castle, or a lake dwelling, they were to come upon a crag or a boulder which closely resembled these forms, they would certainly not be impressed in the same way. They might be interested in them from a mineralogical or geological point of view, but that interest would be of a very different kind from that experienced in the contemplation of an ancient ruin. The difference lay in this, that there were associations of ideas connected with one class of objects which did not exist in the other, and these associations belonged especially to the human element. As they looked at an ancient castle they thought of the great kings or nobles who dwelt in it centuries ago, with their households and retainers. They wondered what kind of lives they lived, what share they had in human joys and earthly sorrows. They imagined for themselves the deadly struggles which had taken place beneath the castle walls, or the great festivities which had been held within. They often said, "If these walls could speak what tales they could tell." It was not the mere ruin itself which stirred their feelings, however grand, or massive, or picturesque it might be. It was its human history which spoke to their hearts as they looked upon its silent walls.

In the afternoon a visit was paid to the parish church of St. Mary, which was described by the Bishop of Hull, who went into the subject of the

connexion of the church with the Cistercians. The party afterwards visited the castle, which was described by Mr. J. W. Walker, F.S.A., who pointed out the special character of the windows and fireplaces, in which herring-bone work is extensively used.

At the evening meeting, in the unavoidable absence of Sir George Sitwell, who was unable to read his promised paper on "History and State," owing to election engagements, a paper was read by Mr. F. Haverfield, F.S.A., on "Roman Yorkshire." In the course of the paper he said that it might be assumed that Yorkshire was occupied at some period before the time of Agricola. There was definite evidence of a technical kind that it had been actually occupied on or before 100 B.C. There was evidence that a certain regiment was in garrison in York, which was destroyed very soon after 100 B.C., and disappeared from history. The advance in Yorkshire was made from Lincoln, which was for a long time the foremost post of the Roman advance before they got to York. The Roman road proceeded first of all from London to Lincoln, and from Lincoln it took a sweep westward round the marshes of the Humber to York. The character of the Roman occupation of Yorkshire was rightly described as being a military occupation. In Silchester, Leicester, Canterbury, London civil life predominated, for there the Romans had set up their recognised form of municipal constitution. South of the Humber there were practically no troops, except at Chester and Caerlaen, which were intended to dominate Wales; but it seemed as if the Northern part of Britain was made into one huge frontier to keep quiet the tribes in Scotland, and the tribes pouring into Scotland from Ireland. At York, however, there was a definite colony, with a full municipal constitution, but York with the neighbouring occupation at Aldborough must be regarded as merely towns in which the civil elements necessarily went with the military life found there. With the exceptions of York and Aldborough there were very few remains of Roman villas in the county. The other places of which traces were found were military forts, which were arranged along the roads. In dealing with the transformation of Roman Yorkshire under subsequent occupations, Mr. Haverfield said that after the Romans left the island the Roman element seemed to have lasted longer, mainly because of the hills, than it did elsewhere. The little kingdom of Elmet, near Leeds, seemed to have held its own against the Saxons down to the year 625, and when it was conquered it was conquered at a time when the ferocity of the Saxons had somewhat abated. In fact, speaking generally, the conquest of Britain by the Saxons was a much longer business than was generally supposed, and in the hills and dales of the north and west of Yorkshire the Britons had held out for a very long time. After Mr. Haverfield's paper, Mr. R. C. Hope read a paper on some of the most interesting features of Scarborough.

On the 17th the members visited Bridlington, where they met at the Priory Church, which was described by Mr. W. H. St. John Hope, who pointed out that the church was only a fragment of a much larger building, for the origin of which they must go back to Saxon times, when, as they learned from Doomsday Book, there was a church at Bridlington. About 1120 William de Gant founded in the Church of St. Mary of Bridlington, a Priory of Austin or black canons. The church was enlarged for their accommodation, and was afterwards rebuilt and became a divided church, the eastern part being practically a private chapel of the canons, and the nave, or western portion, continuing as the parish church. It so remained until the suppression in 1538, when all the eastern portion of the church —the presbytery, central tower and transepts, with all the monastic buildings—was pulled down, and only the parish part of the erection remained. Mr. Hope showed, by the aid of a plan based upon a survey of the buildings taken at the suppression, the extent and arrangement of the destroyed portion, and of the sites of the monastic buildings.

In the afternoon the members visited Burton Agnes Church and Hall, which were described by Mr. J. Bilson, of Hull. After the return to Scarborough, in the evening the Antiquarian Section was opened at the Royal Hotel, by Professor Boyd Dawkins, who dealt with the history of palæolithic and neolithic man, as shown by the remains found in recent ages, pointing out how, from these remains, could be compiled the history of times before written records began.

On the 18th the members visited Whitby, where the Rev. Canon Atkinson gave a discourse on the history of the site and building, observing that they might go back for at least 820 years to a period when architecturally superintended works were going on there and immediately adjacent. They were not to infer that there had been no sort of architectural work of that class in this close vicinity before the period he had mentioned; there had been more than one abbey church on that site at earlier periods. The old Saxon monastery had extended all around, though no doubt it was of very limited area to begin with. He considered that there were a few small cells in the old Saxon monastery, and probably a small abbey church. Afterwards they extended their borders. The cliffs must have receded at least 100 yards since the original monastic settlement was founded. The building of the abbey church commenced from about 1218 to 1220, and, after going on for some time, he thought there was a pause in the progress of the work. Then a recommencement took place for the completion of two transepts. There might be other reasons, but he conceived that want of funds was probably one of the reasons for the stoppage of the work in certain sections.

Mr. W. H. St. John Hope spoke at some length of the architectural features of the building. The company then repaired to the ancient parish church, erected towards the end of the eleventh century, and in the evening left by special train for Scarborough.

On the 19th the members visited St. Mary's, Beverley, where Mr. J. Bilson, F.S.A., read a paper giving a detailed history and description of the church, and after lunch the party met again at Beverley Minster, which was also described in a paper by Mr. Bilson. A tour of the building was afterwards made, and explanations given of the recently-discovered remains of the Chapter House on the north side of the chancel, and of the well near the altar, which it was supposed received the water from the piscina, and which was brought to light chiefly through the instrumentality of Dr. Stephenson. The tomb of an unknown ecclesiastic in the east aisle of the north transept was described by Mr. St. John Hope, and the musical instruments shown above the pillars of the arcading of the nave, in the hands of stone figures, were explained by Mr. R. C. Hope.

At the evening meeting, at Scarborough, Mr. J. R. Mortimer read a paper on "The Pits on Allerston Moor," reviewing the various explanations which had been given of them, and drawing the conclusion that the correct explanation of them was, that they were unfinished entrenchments. Whilst he rejected in the main the village theory of these groups of pits, he did not entirely ignore the existence of the remains of pit-dwellings in Yorkshire, as, in several instances, he had discovered their undoubted remains in connexion with some British barrows which he had opened.

Dr. W. Stephenson then read a paper on Beverley in the olden times, in the course of which he described how, between 1344 and 1366, work was carried out which, he believed, very materially altered the condition and appearance of the town, and immense amounts of "white stone" chalk were used in raising the streets to a higher level; probably to the level of the banks of the streams which ran through them; possibly higher, for some of the houses at any rate were built on made ground. All these streets except one still remained. This work no doubt put most of the Beverley water-courses except Walker Beck, which was open until some seventy years ago, entirely out of sight. In describing the mode of raising the streets, as revealed by the recent excavations, the lecturer said that some branches of hazel had been laid on the surface, having their length across the street. Upon these, and lying in the same direction, young trees were laid side by side, in some instances touching, in others 18 in. apart. Next came a layer of chalk, and occasionally pieces of building-stone in large closely-fitting blocks. These materials formed strata about 2 ft. thick, and the rest of the depth was filled in with earth and loose stone. In concluding his paper Dr. Stephenson observed that nearly all the old streets in Beverley were called "gates," an Anglo-Saxon term which implied the early existence of the town.

In the Architectural Section Mr. J. Willis Clark read a paper on "Libraries."

On the 20th the annual business meeting was held, and subsequently Mr. Micklethwaite read a paper on "A Cistercian Day," picturing the ordinary life of a Cistercian abbey, and Mr. Rye contributed another on "The Building Stones and Canals of Rievaulx Abbey." The party in the afternoon visited the Priory Church of Old Malton, where Mr. St. John Hope described the buildings and their history.

On the 22nd the party visited Rievaulx, which was described by Mr. Micklethwaite and Mr. St. John Hope; and in the evening, at Scarborough, Mr. Bilson read a paper on "Recent Discoveries at the East End of Durham Cathedral."

On the 23rd, the concluding day of the meeting, the members visited Pickering, where they inspected Lastingham Church and Pickering Castle. At the church Mr. Bilson gave a description, and explained its history by means of plans. The castle, an example of the round tower fortress, was described by Mr. St. John Hope, and the Rev. G. H. Lightfoot acted as guide at Pickering Church. The concluding meeting was held at the Royal Hotel at Scarborough in the evening.

[We think it right to say that we are indebted for most of the above particulars to the tolerably full and evidently careful reports in the *Yorkshire Herald*; a well-known archæologist who had undertaken the special report for this journal having unfortunately failed to send it in time for press. We have for so many years been specially represented at the annual meetings of the Archæological Institute that we should not wish it to be supposed that we had made any change in our intentions in that respect.]

THE LONDON COUNTY COUNCIL.

THE usual weekly meeting of the London County Council was held on Tuesday at the County Hall, Spring Gardens, Sir Arthur Arnold, Chairman, presiding.

The Chairman's Annual Review.—The Chairman, in accordance with the practice of his predecessors, read an interesting address on the work of the Council during the past year. In speaking of the improvement in the condition of the Thames, the Chairman said: "When the Council came into existence the river was more foul than at any time since the construction of the main drainage system nearly forty years ago. The pumping machinery at Abbey Mills and elsewhere was obsolete and dilapidated, and the low-level sewer was overcharged as far eastward as Somerset House. By compounding the engines at Abbey Mills and by repair of the pumps, we have accelerated the self-cleansing flow of the main drains, the low-level sewer is not over full, and has now always a steady flow in dry weather. We have cleansed the river by carrying away to sea 2,000,000 tons of sludge per annum, in six vessels, which have cost about 147,000*l.*, and the effluent passing into the river after the removal of the sludge is clearer than the river water, and can be made perfectly innoxious by passing it through filters of coke breeze. Our sludge vessels made over 2,000 passages last year at a total cost of about 40,000*l.*, or, to be precise, of 19*l.* 3s. 2d. per trip. There is no deposit on the sand in the Barrow Deep where the sludge is emptied. We spend 150,000*l.* a year in connexion with Barking and Crossness in this dealing with the sewage. There is a man now at Barking, Thomas Ellison, who at the time when the Council was established, and for twenty-eight years previously, earned an average of about 30s. a week by skimming with a net the sewer fat from the river surface and melting it down for commercial purposes. This fat, with other filth, amounting to 5,000 tons a year, is now intercepted by our screens and filth hoists, and is burnt or disposed of for agricultural manure. Our most interesting experiments have been in the filtration of sewage and in examining the atmosphere of sewers. A filter of one acre has been constructed, the material consisting of 3 ft. of coke breeze covered for retaining purposes with 3 in. of gravel. The quantity of effluent running through this filter is about 1,000,000 gallons daily, and the clarified result passing into the river has so improved that fish live for many weeks in it, and minnows and sticklebacks come up the ditch by which the filter is emptied to the very mouth of the outlet. If it were desired we could treat the whole of the metropolitan sewage in this way upon about 180 acres of land with perfect freedom from noxious smells in the operation, and then the effluent would be much less foul than the ordinary waters of the river."

Electric Light for the Victoria Embankment.—The Highways Committee recommended that they be authorised to take all the necessary measures for establishing, at a cost not exceeding 16,590*l.*, electric lighting for the Victoria Embankment and the Waterloo and Westminster

Bridges (but exclusive of the Embankment-gardens), and that for that purpose they be authorised to obtain tenders and to enter into contracts.

This recommendation was referred back, the Committee being instructed to report the cost of the present lighting, and to ascertain what would be the cost (1) of incandescent gas-lighting, (2) of electricity supplied by a company, and (3) of lighting the Embankment Gardens.

Proposed Cycle Track on Hackney Marsh.—The Parks Committee recommended the Council to approve in principle of the formation of a cycle track, and the erection of the necessary buildings in connexion therewith at Hackney Marsh, at a probable cost of 4,000*l.*

Mr. Jones moved, as an amendment, that the Council does not deem it expedient that any part of an open space acquired for the inhabitants of London should be set apart for the formation of a cycle track.

The amendment, having been seconded, was carried.

Lincoln's Inn Fields Improvement Works.—The same Committee also recommended an expenditure of 1,000*l.* for works of improvement at Lincoln's Inn Fields.

Several Councillors commented on the untidy and neglected condition of the Fields, and Mr. John Burns, in the course of some remarks, suggested that tar-paving should take the place of the present gravel paths.

Mr. Fletcher, the Chairman of the Committee, said that the Committee had done very little to this open space, because they wanted to see its requirements.

The report of the Committee was adopted.

The Supply of Water in the East-end.—The Water Committee, in their report, stated that the Engineer had reported that it had come to his knowledge that in several parts of the Metropolis, both on the north and south of the river, districts which had been placed under constant water-supply had been brought under the system of intermittent supply, and that without any notice having been given. The East London Company was again a defaulter this year, and they (the committee) had received from the Fire Brigade Committee a copy of a letter addressed by the engineer of the company to the District Superintendent of the Fire Brigade, intimating that the company proposed, on account of the drought and waste of water, to shut off the supply during part of the night from some of its service pipes. The discrepancy between the position taken up by the company before the Royal Commission and that now assumed by it with regard to constant supply was worthy of attention, and they directed special attention to the fact that although the company was authorised to draw 10,000,000 gallons daily from the Thames, it only took during the month of April (the last available return) 3,213,547 gallons, while at same time it was drawing 16,700,000 gallons a day more from the River Lea than by the company's statement it acknowledged it could. It should also be noticed that in April last the New River and the East London Companies drew collectively from the River Lea 67¼ million gallons per day, notwithstanding the fact that the Duke of Richmond's commission in 1869 stated that from that source not more than 50 million gallons could be expected, and that the recent report of the commission of Lord Balfour of Burleigh expressed the opinion that the present drawing on the River Lea was too great, but that by the construction of proper storage reservoirs, 52½ millions a day could be abstracted. They had instanced the case of the East London Company because it had been previously before the Council, and because they were in possession of positive information with regard to it, showing that there was a breakdown of the supply last autumn, and again during the frost of last winter, and that at the present time large areas of its districts were restricted to a supply of only two or three hours a day; but the remarks applied in a greater or less degree to other companies. They recommended:—

"That a letter be addressed to the East London Waterworks Company, pointing out the above-mentioned facts and the figures stated before the Royal Commission, and asking whether the Company will give the Council the following information, viz.:—(*a*) How much water the Company has drawn from the Lea during the past week; (*b*) How much it has drawn from wells during the past week; (*c*) How much it has drawn from the Thames during the past week; (*d*) How much it has drawn from the gravel springs at Hanworth during the past week; (*e*) If the company is not drawing the ten million gallons a day which it is authorised to take from the Thames, what are the reasons why this has not been done."

Mr. Beachcroft moved to add to the recommendation the following questions:—

"What is the extent of the storage works being undertaken by the Company under their Act of 1894? What is the progress being made with those works, and what would the progress now have been if the Company's Bill of 1892 had been passed in 1893 instead of being thrown over another Session?"

Mr. H. P. Harris seconded the amendment.

Mr. Marks gave notice to move "That meanwhile the Council's Engineer do confer with the East London Waterworks Company as to the best means of improving immediately the now insufficient and irregular supply.

Mr. Goodman said he understood that while this company were starving their poorer customers of water, they were selling millions of gallons to rich manufacturers and to local authorities for watering the roads.

After further discussion the addition proposed by Mr. Beachcroft was rejected, and Mr. Marks' amendment, having been accepted by Mr. Idris, on behalf of the Committee, was agreed to.

Mr. Charles Harrison, M.P., moved a further addition: "That such application be without prejudice to the Council's rights to enforce its claims against the company."

Dr. Collins seconded this amendment, which was also agreed to, and the Committee's recommendation as amended was adopted.

The Council adjourned soon after seven o'clock.

COMPETITIONS.

WEST OF ENGLAND EYE INFIRMARY.—Out of thirty sketch designs sent in in the preliminary competitions five were selected by the assessor to be worked out in the final competition. Of these five designs the assessor advised the committee that he considered that sent in under the motto "Exe" to be the best, and the committee having carefully examined the plans, have unanimously confirmed his choice. The authors of the design marked "Exe" are Messrs. Edward Thomas & Sons, of 7, Queen Anne's Gate, Westminster. The other four designs were placed by the assessor in the following order of merit, and this was also confirmed by the committee:—"Health"—Mr. Ernest Herbert, of 32, Southampton-row, London; "Aloa"—Messrs. Shoebridge & Lewis, of 103, Strand, London; "Outpatient"—Mr. W. F. Edwards, of 184, Lazell-street, Birmingham; "In Oculis"—Mr. H. F. Talbot, of 7, Cherry-street, Birmingham. It is understood that a portion only of the complete building will, in the first instance, be undertaken, and the choice is made subject to a reliable tender being obtained for the work within 10 per cent. of the architects' estimates, this having been made a condition in the instructions issued to the competitors. The assessor was Mr. Charles Barry.

ARCHITECTURAL SOCIETIES.

NORTHERN ARCHITECTURAL ASSOCIATION.—The annual excursion of this Society was held on the 20th inst. at Chesters, the residence of Mr. N. G. Clayton. Twenty-one gentlemen from Newcastle, Sunderland, South Shields, &c., were present. Mr. Robert Blair, F.S.A., conducted the members over the remains of the Roman station of Cilurnum, and explained the camp, &c., to the members. Mr. Rich, Vice-President, conducted the party over the new buildings, and explained that Chesters has been in possession of the Clayton family for about ninety years. It was originally built by the Erringtons. Some additions were made to it, chiefly in a portico on the north side in Mr. Dobson's time. The present owner, Mr. N. G. Clayton, has had extensive alterations made. The old mansion house has been really gutted and nearly rebuilt, and forms a very small portion of the mansion of to-day. It is built of stone throughout from the neighbouring quarries, is lighted by electric light, generated by Mr. Clayton's own installation, and is supplied with water from a spring about three miles away. Chesters is a great store-house for Roman antiquities, standing as it does on one of the Roman stations, and a great number of objects of antiquity are cared for. Before the present additions, these were partially stored in one of the rooms of the house, partly in the portico, and other places. Mr. Clayton, however, has now built a museum near the entrance lodge, in which to store all the objects of antiquity. New stables have been built a short distance from the house. A new carriage drive is also being made, with entrance lodge and gates. The contractors for the work have been Mr. Walter Scott, of Newcastle; Messrs. Middlemiss Bros. for builders' and joiners' work; Mr. Civil, of Hexham, for part joiners' work; Messrs. Watson & Sons, Newcastle, for plumbers' work and heating; Mr. Smith, of Hexham, for part plumbers' work; Mr. Baty, of North Tyne, and Mr. Charlton, of Stamfordham, for tiling and slating; Messrs. Wilkinson & Co., for plasterers' work; Mr. Ellis, of Hexham, for painting and glazing; and Messrs. Musgrave & Co., for stable fittings. The mansion has been carried out from the designs of Mr. Norman Shaw, and the rest of the works in museum, entrance lodge, gates, stables, houses for coachman, gardener, &c., from designs by Mr. Frank W. Rich, of Newcastle-on-Tyne. After dining together at the "George Inn," at Chollerford, the party returned to Newcastle.

Illustrations.

FRIEZE-PANEL: "HERMES PSYCHAGOGOS."

THE illustration of this design is from a large distemper drawing 7 ft. 4 in. by 4 ft. 4 in., by Mr. J. Staines Babb. The title indicates the function of Hermes as the leader of souls (ψυχαγωγός) to the next world, and illustrates the peaceful arrival of a group of youthful dead in the underworld.

The legend, "Whom the gods love die young," written in Greek on the background of the design, is attributed to Menander the poet, who was a contemporary of the first Ptolemy. A Græco-Egyptian treatment of the accessory ornament has been intentionally pursued in this design.

WEST HAMPSTEAD CONGREGATIONAL CHURCH.

THIS church, which has been built at the corner of Finchley and Burrard-roads, adjoins Hackney College.

The plan of the church is that of the "central area" type of church building, and is one that best suits this site. The architects consider that this system of plan not only keeps the congregation well within range of the preacher's voice, but also permits of the side and end galleries being constructed without having recourse to the usually objectionable columns of iron or stone, which, besides being detrimental to seeing and hearing, tend to lessen the impressiveness of the internal effect of the building in which they are placed.

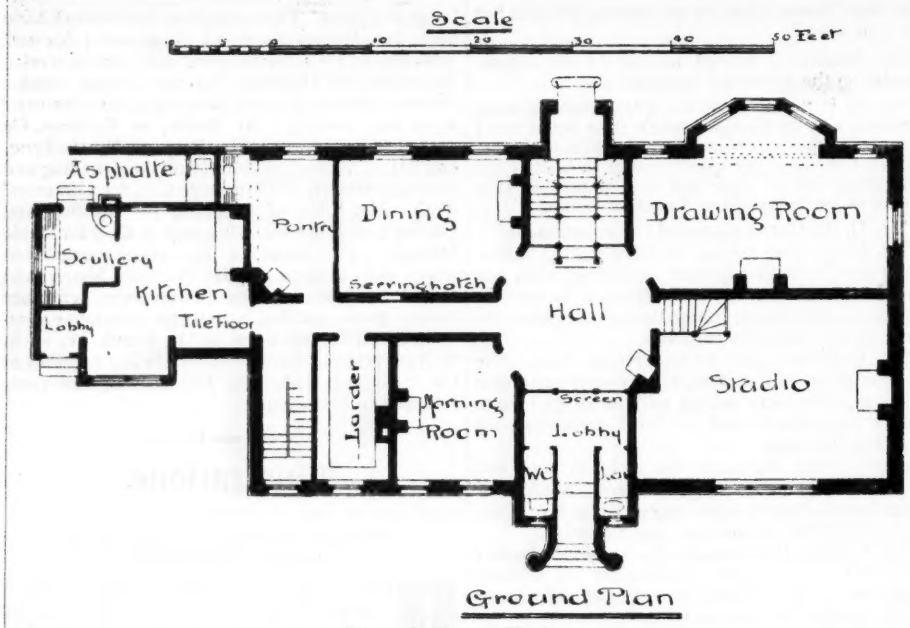
Accommodation is provided for 850 worshippers. Ample means of ingress and egress have been provided by five doorways on the ground floor, and spacious lobbies are placed at the entrances. The floor of the church is formed of solid wood blocks laid on cement concrete. The style of architecture adopted is Gothic, and the whole of the external walls are faced with red bricks, and the ornamental dressings are of terra-cotta and of moulded bricks. The roof is supported with hammer-beam principals, which are exposed to view, the spaces between being plastered.

Great attention has been paid to the ventilation of the church, and there are seven "exhausts" to take the vitiated air out of the building; and ample fresh-air inlets have also been provided.

The internal faces of all walls are plastered. The windows are filled in with stained glass. The roof is boarded, felted, and covered with green slates. The pews, gallery front, roof principals, and all internal woodwork are made of pitch-pine. A perspective view of these buildings appeared in the Royal Academy Exhibition last year. The school department contains a spacious hall, with a nave and two aisles, and the aisles are so arranged that six class-rooms can be formed on each side of the hall. This can be done by sliding divisions, and when these are thrown back the scholars in the class-rooms can all see the speaker on the platform. The school hall affords accommodation for about 500 persons, whilst the infants' class-rooms seat about 100 children.

A library, a large class-room and kitchen complete the school department, but the two vestries provided for the church, and also the spacious church parlour, are equally available for use in connexion with the schools. Accommodation is also provided for a caretaker, and a living-room, scullery, and two bedrooms, are included in this scheme.

At the present time the church alone is built, and the contract for this and the two vestries, the



Plan of House, Haslemere.

boundary walls, &c., has been carried out by Mr. T. H. Kingerlee, of Oxford, at the cost of about 8,000*l.*

Messrs. Spalding & Cross are the architects for the building, under whose supervision the work has been carried out, and Mr. W. H. Gathercole has acted as clerk of the works. The church was opened last week.

STAFFORDSHIRE GENERAL INFIRMARY.

THIS hospital is built in the town of Stafford, on one of the main roads, and, though substantially built, was ill-arranged. The accommodation was for seventy-five patients, but the wards were arranged side by side, so that cross ventilation was impossible, and it was therefore decided to pull down and entirely rebuild the whole of the accommodation for patients, and remodel the centre block for administration purposes and accommodation for the nurses and sisters.

The highest portion of the site is along the main road, and it, therefore, became necessary to extend the wards along this frontage and settle the general disposition of the ward blocks. All the wards, with the exception of the children's ward (which is north and south), have an east and west aspect, and are all aërially disconnected from the central block. Each of the large wards has the usual ward kitchen at one end, and bath, lavatory, water-closets, and sink-room at the other, with a separate escape staircase at the end. The wards are 24 ft. wide, and the beds are spaced 8 ft. centre to centre, the clear height of the wards being 13 ft.

The floors are laid with narrow-tongued oak boards with fireproof floors, the walls are finished in parian and painted, and all angles are rounded off. Each large ward is heated with two stoves with descending flues, and hot-water radiators combined, through which the fresh air is warmed and admitted to the wards; the extract is by means of vertical flues in the walls, assisted, when necessary, by a steam-jet in the turrets, or in other cases by Kite's ventilators. The wards are built on arches, so that they have fresh air circulating round them, both vertically and horizontally.

In the basement, which is entirely above the ground at the rear, and opens on to a garden, are the out-patients' department, with consultation and examination rooms and dispensary, kitchen and offices, doctors', nurses', and servants' dining-rooms, &c., also the existing laundry in detached building.

On the ground floor are two large wards and children's ward for ten beds, three isolation wards, one for children, a day-room, operation and preparing rooms.

In the centre block are casualty and examination rooms, house and assistant surgeons' bed and sitting rooms, matron's sitting-room, and Board-room.

On the first floor are two large wards, two bed-wards, isolation-ward, and day-room.

In the centre block are sisters' and nurses' bed and sitting rooms, and matron's bed-room, and the usual conveniences.

On the second floor are servants' bed-rooms, splint and linen rooms, and the usual conveniences.

The walls are 18 in. brickwork throughout, finished externally with rough-cast and brick-dressings, which treatment has enabled the centre block to be made to correspond with the new work; the roofs are covered with Westmoreland slate.

The Children's Ward is the especial gift of a lady.

The north block of wards was first erected, Mr. T. Espley, of Stafford, being the builder, Mr. Pebworth acting as clerk of works. The remainder of the work is now in hand, the builder being Mr. J. Gethin, of Shrewsbury, and Mr. G. Poole the clerk of works.

The heating and hot-water arrangements throughout are by Messrs. Clements, Jeakes, & Co., and the sanitary plumbing by Messrs. Dent & Hellyer.

The architect is Mr. Aston Webb, and the drawing is exhibited in the Architectural Room at the Royal Academy.

RESIDENCE, HASLEMERE.

THE residence at Haslemere, which we illustrate, is from the design of Mr. George A. Hall, of Westminster. The design is based on the style of the Christopher Wren school, and with the exception of the wing forming the domestic part, the house is rectangular. The lower part is red brick, and the upper story of rough-cast. A bold oak string-moulding divides the stories and all the cills and beads to the windows are of oak. The high-pitched roof, starting from an egg-and-tongue moulded cornice, with brackets to carry the eaves, terminates with a parapet, below which is sunk a flat roof with a large lantern lighting the billiard-room, and a domical skylight throwing light down an octagonal well to the main hall.

The entrance is in the centre, protected with a moulded oak canopy, suspended with wrought-iron ornamental rods. A vestibule screen shuts the hall off, and on entering a winding double staircase to the first landing presents a prominent feature. The high oak newels and balusters are in keeping with the general character. The hall is decorated with weapons collected from different parts of the world, and a recumbent marble statue in the centre is effectively lighted by the top light before mentioned. Descending from the hall is the studio, an apartment about 25 ft. long by 18 ft. wide and 16 ft. high, lighted by a large north light. Adjoining this is the drawing-room, with a bay window which overlooks the country round and the valley of Blackdown.

A panelled dining-room with a contiguous morning-room completes the reception portion of the house. A corridor leads to the back stairs and domestic quarters, which are placed on the east side. Ascending to the first floor, with corridors running east and west, are the bedrooms, and again mounting to the roof, is the billiard-room and servants' bedrooms. The house contains briefly nineteen rooms, besides bath-room, cellars, and other offices. The whole is lighted throughout by electricity, installed by Messrs. Pyke, Harris, & Co., of Westminster, and worked from accumulators charged from a dynamo driven by an oil-engine, which does double duty by pumping water from a deep well. The house and stables stand in about six acres of land, well wooded with larch, hazel, and oak; and the house commands views through the opening vistas of the surrounding country for many miles.

Special care has been given to the internal decoration. All the fireplaces are fitted with Teale's grates. The mantelpieces are specially made. Externally the colouring has been kept low in tone, the orange red of the brick harmonising with the quiet grey of the rough-cast, and the subdued green, of the darkest neutral colour, with which windows and frames are painted.

HOUSE IN HARLEY-STREET.

THIS house has recently been built on the site of the old "Turk's Head" public-house. Utility and convenience have been the first considerations in the planning and construction. The rooms are arranged to obtain the maximum amount of sunlight, and to be away from the party-wall, so as to avoid, as far as possible, the objections inseparable from attached houses. A hydraulic lift is fitted to run from top to bottom. All the joinery on the three principal floors is of mahogany and oak, except some of the linings and skirtings, which are American whitewood. The floors are teak, and the main staircase is oak, made up from the staircase which was formerly in old Ranelagh House. The exterior is faced with red Fareham bricks, with red Mansfield stone dressings. All the windows have wrought-iron casements. The building was erected by the owner, Mr. Bruce Clarke, assisted by a clerk of the works, without the intervention of a contractor. The architect is Mr. F. M. Elgood, of London.

Books.

American Electric Street Railways, their Construction and Equipment. By KILLINGWORTH HEDGES, M.Inst.C.E., &c. London: E. & F. N. Spon. 1894.

THE marvellous growth of the electric-tramway industry in America is not sufficiently appreciated in this country. While we have done, comparatively speaking, next to nothing during the last five years in electric traction, in that time six hundred electric tramways have come into existence in America, operating nearly 10,000 miles of track and over 20,000 cars. The capital invested in American electric tramways is 45,000,000*l.*, held not only by interested railway companies, as the Pennsylvania Railway Company, but also by companies seeking permanent investments for their capital, as the New York and Boston insurance societies. The West End Street Railway Company, Boston, which is the largest tramway company in the world, pays 9 per cent. on its ordinary shares, and yet you can travel $7\frac{1}{2}$ miles for $2\frac{1}{2}$d. in a comfortable car. America is the country which has the most to teach us about electric traction, and any book on this subject can hardly fail to be interesting.

This handsome volume is the result of an extended tour by Mr. Killingworth Hedges in America. It can be readily understood that, with such a wealth of material to compile from, the author must have had considerable difficulty in selecting typical systems to describe. We were disappointed, for example, in finding nothing about the Philadelphia Traction Company, with their underground system of feeders, and their electric street-sprinkler that runs at fifteen miles an hour, sprinkling the streets to allay the dust.

In the preface there is a good deal that calls for comment, and not least the following statement:—"In the following pages American practice is exclusively treated." After reading this one is somewhat taken aback by reading a full description of the Buda Pesth tramways, as well as English electric tramways. The introductory chapters on the electrical circuit, on historical notes, and on the construction of the road, are accurate and clearly illustrated. The descriptions, too, of the trolley and conduit systems are good. The author is not sanguine enough about "multiphase" currents, unless he means by the "distant future," a year or two.

The chapter on electric motors opens with a feeble description of the three-wire system as used at Portland, Oregon. The first diagram is misleading, and would hopelessly fog the general reader. Alternating currents for traction are dismissed in a short paragraph, a foot-note referring to the Siemens' three-phase motor at the Chicago Exhibition. The rest of the chapter

gives well-illustrated descriptions of motors made by the General Electric Co., the Westinghouse Co., &c.

A fuller description of the use of the "Booster" dynamo would have been welcome; we expected to read something about how it got rid of the necessity of having such heavy copper mains. The description of lightning-protectors is a little too short to be quite intelligible. The necessity for these on tramway lines is not quite appreciated by engineers in this country, but the following extract, describing Mr. Sprague's experience on the pioneer Richmond line in 1887, illustrates the need of them:—

"Passengers often did not know when the lightning discharged through the car circuits, or if they did, they quickly got used to it. We found that the lamp circuits offered a very free path, so when a thunderstorm appeared the lamps were turned on, ostensibly to light the car, as was carefully explained to timid lady passengers, but really to give the lightning a free path."

Chapter XI., on examples of electric railways, gives brief, but clear, descriptions of the West End Street Railway, Boston, and of the Niagara Falls and River Railroad amongst others. Chapter XIII. is a compilation from various sources comparing the cost of traction by cable, electricity, and animal power.

In an appendix a glossary of technical terms is given, which explains many Americanisms found in the work. Mr. Hedges might with advantage have given us the English equivalents in the text, as circuit-breaker and current-diverter are not nearly such good names as switch and resistance. The explanation given of "Booster" is obscure, "a current of varying potential," being apt to upset one's ideas; also to explain a "burn-out" as "destruction, usually caused by a short circuit," is like defining a "broken oar" as "waste, generally caused by catching a crab."

The book is very handsomely got up, and there are plenty of good pictures and diagrams, which make it very inviting. Every tramway engineer will find it useful. As a book of reference it is valuable, and, treating as it does of an industry which is just beginning to be developed in this country, it can be recommended to youthful electrical engineers.

Electrical Engineering for Electric Light Artisans and Students. By W. SLINGO and A. BROOKER. New and revised edition. London: Longmans, Green, & Co. 1895.

IN the preface to the first edition the authors state that their endeavour is to provide a single work covering the whole field of electric lighting, which would not only be useful for junior electrical students, but also for those who, having little or no electrical knowledge, yet have under their supervision various kinds of electrical machinery. Hence the work would be of service to marine, railway, and tramway engineers, municipal officials, and managers of mines and factories.

The authors may be congratulated on having succeeded to a very considerable extent in their endeavour. Many difficult matters are explained in clear and simple language, and mathematical symbols are used most sparingly. Perhaps the book would have been made more useful by important formulæ being given in foot-notes or in an appendix, but after all, if the student knows enough to be able to use the formulæ intelligently he could easily supplement the lucid descriptions in this book by reference to mathematical text-books. Already the book is getting of unwieldy size, and there is not much room for pruning down, whilst many new developments are barely touched upon.

The first three chapters treat of units, Ohm's law, and primary batteries. The description of the Clark Cell is the only one we take exception to, being a little antiquated. The platinum wire fused through the test-tube is found not to answer in practice. Why drag in any reference to the B.A. unit of pressure? This might well puzzle an electrician, let alone the municipal official. Although it is mentioned that the E.M.F. of the Clark Cell decreases with increase of temperature, yet its E.M.F. is given as 1·435 volts without specifying the temperature. We have tried to verify the statement that "all liquids do not diffuse at a uniform rate, the rate of diffusion varying inversely as the square of their specific gravities," but have not found any authority who would commit himself to such a sweeping assertion. Indeed, alcohol and water behave in quite a different manner, as the heavier liquid diffuses more quickly than the lighter one.

Chapter IV. is on the measurement of current strength, and explains clearly various types of ammeters. In describing the Siemens' dynamometer, it is not stated that the movable coil should be placed so that its plane lies east and west, with the side in which the current is descending pointing towards the east. If this is not done, two different readings are got, depending on the direction of the current through the instrument. In rough work we may often neglect this precaution, but whenever making a test pretending to accuracy we must place the dynamometer in the position described. It should also have been stated that it cannot be used in the neighbourhood of a dynamo or a choking coil, *i.e.*, in an irregular or varying magnetic field.

The next chapter is on the measurement of resistance, and gives all the ordinary methods. Sufficient stress is not laid on the importance of recording the temperature of the coil when giving its resistance. Nothing annoys an electrician more than when an apprentice gives an elaborate list of resistance measurements without any mention of temperature. The method which is given for measuring the resistance of a galvanometer is a very bad one. An error of 5 per cent. in reading the current—quite a possible one when using a tangent galvanometer—would produce an error of nearly 300 per cent. in the result deduced (p. 140). This surely should have been pointed out. Perhaps the authors thought that if they did this, the shock to the reader would make him chary of their methods in the future. The telephone method of measuring resistance might have been given with advantage. It would have been better if keys were always shown in the diagrams, as beginners are only too apt to omit them. In describing the method of using the Silvertown Testing Set in order to measure insulation resistance, it is assumed, as is commonly done, that the deflection of the galvanometer is proportional to the current. This assumption is only approximately true for small deflections, and we have seen strange results arrived at by assuming that it holds true for large deflections.

Chapter VII. on electro-magnets and electro-magnetic induction is an excellent one, and gives a clear idea of a difficult subject. The chapters on dynamo-electric machines proceed on the usual lines; we could dispense with the description of the De Meritens machine, and would like to have had an inductor alternator described, as these are puzzling to the uninitiated. The descriptions of motors and their applications, transformers, secondary batteries, &c., are as good as the limited space at the disposal of the authors allows. The chapter on photometry is fair; the relative advantages of Rumford's and Bunsen's methods are not discussed, and the reader might think that a Bunsen photometer could be used in a light room. The last few pages in the book, describing meters, are unsatisfactory, only a few old-fashioned forms being shown. We were surprised at finding no description of a watt-meter, or a condenser, in the book.

Notwithstanding the one or two faults we have pointed out, we can congratulate the authors on having produced a thoroughly serviceable text-book. Their style is clear and lucid throughout; there is an excellent index, and for a book of this size there are remarkably few misprints.

Portative Electricity. By J. T. NIBLETT. London: Biggs & Co.

MR. NIBLETT has written this treatise mainly for the use of those who use small secondary batteries for economic, artistic, or scientific purposes. A great many people possess small secondary batteries, and, owing to ignorance, they are often ruined by neglect or improper methods of charging. Part III. of this little book on the management of portable apparatus for storing electrical energy will prove very useful to them. Part I. describes nearly all the possible uses that small electric batteries can be put to. The description of their use for decorative and stage effects may prove useful to those getting up Christmas theatricals.

Correspondence.

To the Editor of THE BUILDER.

ARCHITECTURE AND THE ACADEMY.

SIR,—I have hesitated to express an opinion on this matter from a feeling that I have been somewhat "out of it." But your admirable summing-up of the discussion which you so effectually raised induces me now to say a few words from my own isolated position and independent point of view respecting it.

I never had any efficient instruction in finished drawing, or any effectual style of drawing at all to follow. Getting into active work at the earliest possible age, I never acquired it. With all my deep appreciation and patient study of old work, I could only endeavour to impress it on my mind by sketching and drawing, but without the power of reproducing it in an appreciative or attractive form to others. I remember a leading man in the west country of that day saying I was the only architect he knew whose executed work was so greatly superior to what appeared to be expressed by his plans; which, though cutting sharply both ways, I naturally took as a great compliment. And I remember my friend Mr. Street saying of me—almost at me—that, necessary as drawing was to an architect, he knew there were real architects who could not draw.

Still, having made my way, and with an office-staff of eight or ten, and with most of the drawings sent out necessarily made by assistants, I have never sent out anything that was not essentially and absolutely my own, whether good or bad, even to the smallest detail. I used to design a great deal to ½-in. scale, to be reduced subsequently to ⅛-in. My modes involved also the necessity for a considerable amount of personal instruction and direction to smiths, carvers, and other handicraftsmen.

Yet I have never acquired the art of sending in more than one or two designs acceptable to the Academy, whether drawn by myself or by others; although I have seen there very many showy sketches of buildings void—as it seemed to me—of all architectural merit or character.

Though "I say it as shouldn't say it"—like the farmer who had "the best pair of leathern breeches in our parish,"—I am convinced, for instance, that my important work of "Humewood" *ought* to have been exhibited, as illustrating architectural progress (or retrogression), even though neither the large nor the small perspective might be said to come within the category of high academic finish. Or, again, I would submit, in like manner, the perspective of the design for the Infection Hospital for Winchester College (either the smaller one, or the larger one with plan in the corner), to which was awarded, by the National Health Exhibition, the silver medal (the highest award) for school sanatoria.

Perhaps you will not be surprised, therefore, if I should endeavour to go a little beyond all the suggestions which have been made as to "more space," "better classification," exclusion of "sketches of old work" (which are better fitted for a water-colour department), separation of stained glass and decoration, more efficient discrimination in selection, &c.

We are credibly informed that *one* architect is deputed to look after the interests of the architectural branch of the annual exhibition of the Academy! But is *this* all that is due either to the Academy itself or from a Royal Academy of the Arts of Painting, Architecture, and Sculpture? No, assuredly; for architecture is entitled to due recognition equally with the other arts, and only the architectural members of the Academy should be on the Hanging Committees for architectural works, to the exclusion of painters. Their number should be recruited up to some given number by architects chosen from the Institute, whether selected by the President or invited by the Academy, as might be arranged.

The selection of the paintings is thrown, and properly thrown, upon a committee of expert painters, exceptionally fitted for the task, which task, if performed with any amount of discrimination and sense of responsibility, must be well-nigh overwhelming. And it would be most unreasonable to expect them, at the end of their own special work, to expend their exhausted energies in pronouncing a discriminate judgment upon any number of the works of another art, a task for which they are eminently unfitted, yet which they would hesitate to delegate to any "inferior" department or authority.

Reform must come if ever architecture is to be expected to hold her own; and it must proceed upon some such line as that which I have ventured to indicate.

WILLIAM WHITE.

The Student's Column.

METALS USED IN BUILDING.—IV.

THE PRINCIPAL ORES *(continued)*.

LEAD.—Whether this metal occurs in the native state, or not, is a doubtful point. *Pure lead*, according to certain authors, has been found in thin plates or scales, and in small globules. It is said to have been met with at Alston Moor, in Cumberland, in the Carboniferous Limestone of Bristol, at Kenmare in Ireland, and other places; its method of association with the ores of lead has suggested the probability of its having been accidentally reduced. Be that as it may, pure lead, if it exists, is a mineral of extremely rare occurrence.

The principal ores of lead are:—

1. *Galena*, or sulphide of lead (lead and sulphur), which contains about 86·6 per cent. of the metal.

2. *Cerussite*, white lead ore, or carbonate (lead, oxygen, and carbonic acid), with about 77 per cent.

3. *Anglesite*, lead vitriol, or sulphate (lead, oxygen, and sulphuric acid).

4. *Minium*, or red oxide of lead (lead and oxygen).

5. *Pyromorphite*, or green lead ore, a phosphate of lead, with a number of varieties.

The above enumerated ores are by no means the only ones raised, but no others are important for our purpose. Indeed, we felt almost inclined to omit the three last-mentioned also, as the lead of commerce is almost entirely obtained from the sulphide and the carbonate, principally the former. No mineral is more readily recognised than galena, and when most people speak of lead they mean that variety of it. It crystallises in the cubic system, and the cleavage is perfect, a lump breaking up into minute cubes of bright steel-grey lustre when struck by the hammer, or when any force is exerted on it. Some galena is bluish-metallic in appearance. The difference in lustre and colour is due in many instances to the admixture of other substances with the true galena. One of the commonest foreigners is silver, and when present in any quantity the ore is known as *argentiferous galena*. As it is not difficult to separate silver from lead, the ores of the last-mentioned metal are as much exploited for the silver as for their own sake, and other valuable substances are found therewith. Galena occurs massive, and coarsely or finely granular. According to recent Parliamentary returns lead ore comes from no less than twenty-one counties in the United Kingdom; also from the Isle of Man. Durham produces most, and Derbyshire and Flintshire yield large quantities; but the most productive mine is Foxdale, in the Isle of Man. The amount of lead obtainable in smelting is reckoned as 95 per cent. of the amount indicated by dry assay. In calculating the quantity of silver obtainable from the ore, the amount in ores containing less than 3 ozs. silver per ton is generally omitted, as in the majority of cases it is not extracted. Lead is a mineral of almost universal occurrence; large quantities come from Spain, Australia, and the United States.

Of the minor varieties of ore the carbonate is often found with galena, and when pure it is a white crystalline mineral, possessing, sometimes, an earthy appearance, though it occasionally assumes a dark bluish tint when a slight proportion of the sulphide is mixed with it. When regularly crystallised it is rhombic in form, but it also occurs granular, massive, compact, and stalactitic. Mr. F. Rutley remarks that it may result directly from the decomposition of the sulphate (anglesite) by water charged with bicarbonates. As anglesite results from the oxidation of galena, by the sulphide being turned into sulphate, the carbonate (cerussite) may therefore be regarded as being indirectly derived from the decomposition of galena.

In order to avoid misconception, although we shall revert more in detail to the subject later on, it may be stated that the "white lead" of commerce, when it has any right to the name, and is carbonate of lead, is not always derived from cerussite as the latter occurs in nature. In fact, "white lead," as used for white paint, &c., is for the most part, artificially prepared; one method of obtaining it is by passing carbonic acid gas through a solution of subacetate of lead; another is by acting upon sheet-lead by acid fumes. Such white lead, though free from adulteration, is not as good for paint as when mixed with barytes (sulphate of baryta), as it is apt to become blackened in time, owing to the carbonate being transformed into sulphide of lead.

Minium, the red oxide, is usually found associated with galena, and sometimes with cerussite. It occurs in parts of Shropshire and Yorkshire, at Alston in Cumberland, Weardale in Durham, at two or three localities in Scotland and Ireland, and sparingly in Germany, Siberia, and the United States. The red lead of commerce, used in the manufacture of flint-glass and for various purposes by the plumber and painter, has the same chemical composition as minium, but is prepared artificially. The sulphate (anglesite) is represented in many localities, and occurs in sufficient abundance to be worked as an ore in certain parts of the world, notably in Australia. Pyromorphite is found associated with other ores of lead at various localities, and when plentiful is smelted. It is composed of phosphate and chloride of lead, occasionally of phosphate of lime and arsenic acid.

In regard to the mode of occurrence of lead ores generally, it may be said that they are found under a variety of circumstances. In the first place, they are exploited in regular veins or mineral lodes. The following diagram (fig. 4), based on the researches of Dr. C. Le Neve Foster,* shows that in certain instances the fissure forming the lode was filled with bands of mineral matter

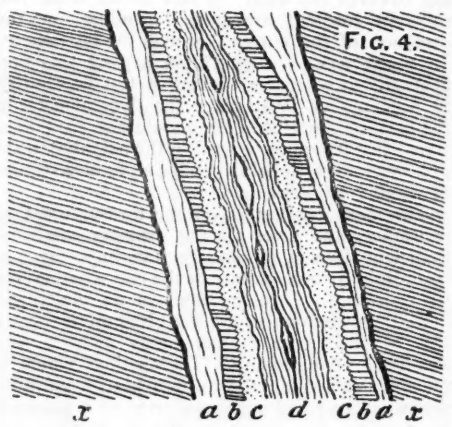


FIG. 4.—*Section across a lead vein, Wheal Mary Ann, near Menheniot, Cornwall.*

a = Band of Chalcedonic Quartz. *b* = Vitreous Quartz. *c* = Galena. *d* = Chalybite. *x* = Slate through which the vein runs.

deposited in regular order. Thus the two sides next to the "country rock" (slate), are lined with chalcedonic quartz (*a*); then, inwards, follows a layer, on each side, of vitreous quartz (*b*); succeeded by bands of galena (*c*) disposed likewise; the centre of the fissure being partially filled by chalybite (carbonate of iron). The student will remember that these veins are not pipes, but filled-up fissures stretching, perhaps, for many miles over the country, and penetrating to an unknown depth. It would seem that the history of such a lode as that depicted was somewhat as follows:—After the fissure was formed, by earth movements in the slate, the two walls became encrusted by chalcedonic quartz; there was then a cessation of deposition, accompanied it may be by movements which widened the fissure. Conditions were then present by which another kind of silica, vitreous quartz, was formed as a thick crust on the chalcedonic material. Another pause, and solutions, or vapours, laden with lead, put in an appearance, and left a deposit of galena on the walls on both sides. Finally, iron was introduced, and practically filled up what remained of the fissure. These are the broad features of the lode. The student sees that the actual thickness of any one of the bands of mineral is controlled entirely by local circumstances. The galena may accumulate in places as a band some two or three inches in thickness, and may, a little farther down, thin out to a mere streak not worth working. In other mines, this valuable metal may alternate with vein-stuff a number of times, so that, instead of two bands in the vein, there may be twenty or thirty.

In Derbyshire, at the Mill Close mine, near Darley Dale, lead is found in veins associated with ores of zinc (presently to be described), iron pyrites, calcite, and fluor-spar. As usual, a small proportion of silver accompanies the lead, but we were informed that it is not extracted. In reference to the geological age of the deposits in which lead ores occur, in this country they are chiefly of the Carboniferous period, and are seen penetrating the thick limestone near the base of the series. At the same time, the Foxdale mine in the Isle of Man is an extremely productive lode in granite; and we have seen that in Cornwall veins are found in slate. In the last-mentioned county it was formerly supposed that lead was confined to veins having a meridional direction, but the discovery of the lodes at Chiverton, which have an east and west bearing, put an end to the idea. Mr. Brenton Symons in his work on the "Geology of Cornwall," p. 96, remarks that the association of plumbiferous veins with slates, still further removed than those of copper from granite, is unquestionable; but that a considerable amount of metamorphism was necessary to ensure productiveness, is shown by the meagre and barren lead veins in slates that are comparatively unaltered. Small quantities of lead ores have been obtained from St. Erth, Phillack, and Gwinear, but the lodes are of no value in that part of England west of the Carn Menellis range. The Cornish lead ores were much esteemed for the large proportion of silver they enclose.

But it must not be imagined that all lead ore is obtained from fissures; it is found also in stratified rocks, when it commonly replaces some other mineral. Thus, near Bridgend, in Glamorganshire, the Rhætic beds contain a quantity of the metal disseminated in little lumps throughout certain horizons. Again, in beds of similar age (Triassic), at Mechernich, in Prussia, lead is extensively exploited in sandstone. Dr. Le Neve Foster remarks* that the ore exists in the form of little concretions of galena and grains of quartz, but these are not uniformly distributed through the sandstone. The concretions are from one-twenty-fifth of an inch to one-eighth of an inch in diameter, and are harder than the surrounding sandstone, which is generally very friable. The amount of metallic lead in the sandstone is between 2 and 3 per cent.; but the concretions themselves contain from 20 to 24 per cent.

No lead deposits are better known than those of Leadville, in Colorado, thanks to the careful researches of Mr. S. F. Emmons.† The most valuable ores are found in the vicinity of the junction of white porphyry with blue limestone of Carboniferous age. Along the plane of contact the limestone has been metamorphosed, as it were, by a process of gradual replacement, by galena, of the original constituents. The lead is silver-bearing, and in addition to galena, the varieties cerussite and kerargyrite occur in association with the hydrous oxides of iron and manganese, also with chert, quartz, clay, heavy spar, &c. The vein appears to have been formed through the agency of aqueous solutions which took up their mineral contents from the porphyry, and brought about the alteration of the limestone as they penetrated into it.

From the above observations, therefore, it will be seen that lead ores, though principally occurring in veins, or fissures properly so-called, are found also in stratified rocks, such as limestones and sandstones disseminated throughout the clastic constituents of those rocks. Further, they do not seem to affect any particular class of beds when existing in veins, but run alike through aqueous, igneous, and metamorphic rocks. It seems probable, however, that the process of the original formation of the ores was accompanied by heat, though the latter might not have been very intense.

Zinc.—This metal is very important to us from the circumstance that it is used in so many alloys. *Native zinc* is said to have been found in Australia, though its occurrence is not altogether a well-established fact. The ores from which the greater part of the zinc of commerce is derived are:—

1. *Calamine*, carbonate of zinc (zinc, oxygen, and carbonic acid), containing about 52 per cent. of pure metal; the latter, however, is often partly replaced by iron, or manganese, and a little lime.

2. *Blende*, sulphide of zinc (zinc and sulphur), with about 66 per cent. of pure metal.

3. *Zincite*, red oxide of zinc (zinc and oxygen), having about 80 per cent. of pure metal.

4. *Hemimorphite*, silicate of zinc.

The first-mentioned is the principal ore treated in this country; it is usually of a brownish tint, and is found both in beds and veins associated with galena and iron and copper ores. Blende, known to miners as "Black Jack," is next in importance. It is lustrous, occurring as black shining crystals, the dark colour being due to sulphuret of iron; but sometimes it is of a brown or yellowish tint. Certain varieties resemble tin-stone, but may be easily distinguished from that valuable material by their perfect cleavage and relative softness. Red zinc ore would be white if it contained no iron or manganese. It is found massive, foliated, granular, or in sparsely-distributed grains. The manganese impurities may occur up to 12 per cent. of the whole mineral. When exposed to the action of the weather, the surfaces of this metal become encrusted with carbonate of zinc of light yellow, almost white, colour. It is a very valuable ore, but only occurs at two or three places, in the United States. Hemimorphite, the silicate (or electric calamine, as it is called by some, on account of its development of electric properties when heated), is found almost everywhere associated with the other zinc ores alluded to, but is not so important a source of the metal.

Cadmium.—This metal is briefly described here as being closely allied to zinc in its mode of occurrence. It is a white, ductile material, found in nature as a sulphide, and also in small quantities in zinc ores. The sulphide contains about 77 per cent. of cadmium; in practice, however, the metal is obtained from calamine and zinc blende. The yellow sulphide is used as a paint.

* "Trans. Roy. Geological Soc., Cornwall." Vol. IX., p. 153.

* "Ore and Stone Mining." 1894, p. 55.

† "Geology and Mining Industry of Leadville." 1886. (Monograph of U.S. Geol. Surv.).

OBITUARY.

MR. JAMES RENWICK.—In a recent number the *American Architect* gives some particulars as to the life and work of the late Mr. James Renwick, by whose death, it observes, the profession of architecture in America loses one of its most honoured members. Mr. Renwick was born in New York in 1818. His father was Prof. James Renwick, of Columbia College, and the son graduated from this college at the age of seventeen, and immediately devoted himself to the active study of engineering and architecture. In those days, there was not much distinction between the engineer and the architect, and young Renwick found field-work on the Erie Railroad, and the Croton Aqueduct, suitable to the profession which he had chosen. Within a very short time after his graduation, however, a competition was invited for designs for a new church, which was to be built in what was then the residence quarter, at Broadway and South-street. Young Renwick sent in a design, which was adopted, and carried out. The tradition among New York architectural students used to be that Renwick was only eighteen years old when he won this competition. After an interval, during which Mr. Renwick superintended the construction of the Distributing Reservoir on Fifth Avenue, he entered into competition for another important church, the Catholic Cathedral, on Fifth Avenue, and won this also. These works, with Mr. Renwick's family and social relations, brought him many commissions. In New York alone, he built the Stock Exchange, Booth's Theatre, and the Young Men's Christian Association Building, the Foundling Hospital and the Ward's Island Lunatic Asylum, besides St. Bartholomew's Church, and the Church of the Covenant, and a multitude of smaller buildings, and he was also much employed in other parts of the country. For the past ten years or so his work had been carried on under the partnership of Renwick & Aspinall (now Renwick, Aspinall, & Renwick).

GENERAL BUILDING NEWS.

EXMINSTER CHURCH RESTORATION.—At a recent meeting of the restoration committee of this church, it was unanimously decided, on the motion of the vicar, seconded by the Earl of Devon, to remove the west gallery and to open the lower, in addition to the general restoration of oak roofs and reseating in oak already decided upon. Messrs. Andrews, of Teignmouth, having withdrawn their tender, the work has been entrusted to Mr. Herbert Read, of Exeter. The architects for the restoration are Messrs. J. W. Rowell & Son, of Newton Abbot.

NEW SCHOOLS, GOLEAR.—At the monthly meeting of the Golear School Board held on Thursday last week it was decided to build new schools in Royd-street to accommodate 400 children. Mr. J. Berry, of Huddersfield, was appointed architect.

RESTORATION OF FARNWORTH CHURCH, LANCASHIRE.—On the 22nd inst. the parish church of St. Luke, Farnworth, was re-opened by the Bishop of Liverpool, after restoration and redecoration. The old pews have been removed, and new ones of oak substituted. A carved oak screen now divides the chancel, and a new oak ceiling encloses the organ-chamber. The renovation scheme has also included the addition of vestries on the north side. The church will be heated by a system of low-pressure hot water. A new organ, encased in oak, has been fitted into the organ-chamber, this being the work of Messrs. Peter Connacher & Co., of Huddersfield. The carving of the pulpit, lectern, &c., have been done by Messrs. Hatch & Sons, of Lancaster, while Messrs. Tharpley & Hunt, of the same city, have supplied additional stained glass where it was needed. The architects of the restoration were Messrs. Austin & Paley, of Lancaster, and the contractors, Messrs. Woods & Sons, of Bootle. The cost of the whole restoration, exclusive of special gifts, was 4,000*l.*

CHURCH EXTENSION AT CHORLTON-CUM-HARDY, LANCASHIRE.—On the 20th inst. the corner-stone of the new south transept of St. Clement's Church, Chorlton-cum-Hardy, was laid. The church itself, which replaced a very ancient structure, was built some thirty-five years ago. A north transept was afterwards added, and the addition is a replica of it. It will provide accommodation for something over 100 worshippers, and will cost to complete about 1,500*l.* Mr. W. Higginbottom (Messrs. W. & G. Higginbottom, Manchester) was the architect.

SCHOOLS, CAMBORNE.—The foundation-stone of Camborne New National Schools was laid on the 17th inst. The architect for the new building is Mr. Sampson Hill, of Redruth, and the contractors are Messrs. Moyle & Michell.

AN OLD LAWNMARKET BUILDING, EDINBURGH.—The Dean of Guild Court have just passed plans for altering one of the few remaining ancient buildings of the High-street. The tenement adjoins the Assembly Hall, and was purchased last year for the Church of Scotland. It is situated in a court known as Boswell's Court, so called from one Dr. Boswell, who lived there about 1760. The house, however, s very much older than that, and even without any record of its history, it must have been in existence at least 100 years before. The front, to Castle Hill, is in polished ashlar, with numerous lofty and narrow windows, and still retains fragments of the moulded stringcourses and a goodly row of dormer gables, with finials of varied designs, now much weatherworn. The original doorway, which is also the door to an old-fashioned turret stair, remains with its mouldings fairly entire. Over it is the lintel, with a panel and inscription which speaks plainly as to its age, "O Lord in the is mi traist," and some initials. The plans, now passed, will complete the improvement scheme of the Assembly Hall, originated and carried through so far successfully by the efforts of the Rev. Dr. Mair, of Earlston. In these alterations the architects, Messrs. Hardy & Wight, have provided on the two lower floors ample accommodation, much needed by the Assembly. Committee-rooms, conversation-rooms, &c., and the two upper floors are arranged as dwelling-houses. The external aspect of the old building will be carefully preserved in all characteristic features, and the rough walls roughcasted and repaired.—*Scotsman.*

TOWER, EMMANUEL CHURCH, COMPTON GIFFORD, DEVON.—On the 17th inst. the Mayor of Plymouth, Mr. W. Law, laid the memorial-stone of the tower to be erected at Emmanuel Church, Compton Gifford. The ceremony marks the final stage in the erection of this church. The main walls, which are 4 ft. thick, are built of local limestone, with Doulting stone plinth and dressings. The first stage of the tower will form a new entrance porch 13'3 square, which is to be paved with slabs of Portland stone and rubbed Delabole slate. A circular staircase in one corner leads to the bellringers' floor, and is continued upwards to give access to the belfry. There will be access by means of ladders from this stage to the parapet, which runs around the top of the tower. Some carved work is introduced at the entrance, and the belfry stage is marked by long traceried openings on all four faces. The height of the tower will be 71 ft., and the spire 79 ft. high, making a total height of 150 ft. without the wrought-iron finial. Though the present contract only includes the tower, arrangements have been made whereby the spire will be proceeded with immediately on the completion of the tower. The spire will spring from the tower with an octagonal drum, with hexagonal turrets at the four corners. There are four open-work dormers—one central with each face of the tower. The architects are Messrs. Rogers, Bone, & Coles, of Westminster; Mr. Jonathan Marshall, of Plymouth, is the builder; and Mr. C. E. Perkins, also of Plymouth, is the clerk of the works.

ADDITIONS TO THE ALBERT MEMORIAL MUSEUM, EXETER.—On the 19th inst. the newly-added portion of Exeter's memorial to the late Prince Consort, the south-east wing of the Albert Museum, was opened. The building occupies a piece of ground which abuts on Upper Paul-street and Bradninch-place. What may be termed the front, faces Upper Paul-street, and the style of architecture deviates slightly from that of the old building. The walls are of Pocombe stone with Hamhill dressings; the huge columns in front are of Devonshire granite polished. The tracery of the windows is of Hamhill stone. From the main entrance of the Museum in Queen-street there is a passage-way, on each side of which there is a class-room, 30 ft. by 22 ft., with wooden dados, and floors of wooden blocks. On the Paul-street side there is a Museum Room, 57 ft. 9 in. by 41 ft. 6 in. Upstairs and immediately above this Museum Room, there is a large apartment, presumably set apart for the Art Gallery. It contains a large recess with columns at one side, and by way of an arched doorway leads in to the Ethnological Room, a very narrow apartment. Upstairs there are also two lecture-rooms, one about 48 ft. by 22 ft., and the other 48 ft. by 27 ft. In the downstair portion of the new building, at the rear of the class-rooms and approached by steps, is a small laboratory adapted for the preparation of specimens, but which will be used at present in connexion with technical education. There is a lecture-room for teachers of chemistry the same size as the chemical laboratory. The laboratories are fitted with an air-pump, balances, and numerous apparatus for the use of the students. The premises throughout are fitted with the electric-light apparatus, and they are to be heated with hot water. Plenty of light has been secured by open ceilings and a liberal use of glass in the roofs, light being conveyed to the lower rooms not only by means of windows but by the flooring of the large upper room being largely composed of glass. The architects are Messrs. Fulford, Tait, & Harvey; the builder is Mr. Woodman. Messrs. Easton & Sons supplied the stonework. The carving in connexion with the new additions has been carried out by Messrs. Harry Hems & Sons, Exeter.

SCHOOLS, WATFORD, HERTS.—At a meeting of the Watford School Board, held on the 22nd inst., the design submitted by Mr. C. P. Ayres, of Watford, architect, was selected for the new schools to be erected in Fearnley-street, on land recently purchased from the Earl of Essex. The schools will accommodate 1,020 children, and the approximate cost is 10*l.* per head including central halls.

SANITARY AND ENGINEERING NEWS.

SEWERAGE WORKS, YORK.—The new sewerage works at York have just been completed. In the construction and development of the scheme three objects had to be attained—viz. (*a*) to remove as speedily as possible from the houses in the city all sewage, slops, and foul liquid; (*b*) to give the existing sewers, which now discharge under water into the river, a free outfall at a lower level, and so prevent backing-up; (*c*) to prevent the pollution of the river Ouse by the crude sewage of the city. To obtain these results a system of intercepting sewers have been constructed. Speaking broadly, they follow the banks of the river and the natural valleys in the city. The existing branches have been connected with the new system, so that instead of the sewage flowing into the rivers or streams, it is now conveyed by gravitation to the eastern boundary of the city, on the left bank of the river, to the pumping station at Fulford. At this point the main sewer is a little more than sixteen feet below summer level of the river. The total length of new sewers is 17 miles 527 yards, as under:—Brick sewers, varying from 6 ft. 9 in. by 4 ft. 6 in. to 2 ft. 9 in. by 1 ft. 10 in., 2 miles 513 yards; iron sewers, varying from 3 ft. 4 in. to 9 ft. internal diameter, 1,044 yards; stoneway sewers, varying from 2 ft. to 9 in. internal diameter, 14 miles 730 yards; total length, 17 miles 527 yards. There are three inverted syphons under the river, connecting the intercepting sewers on one bank with those on the other. In addition to the construction of new sewers, works have been carried out in various parts of the city for the removal and interception of old drains, and the general arrangement of the scheme of the sewers has been designed not only to secure the collection of the sewage in the most adequate manner, but in a special degree to suit the low-lying character of the land upon which the city is situated, and secure the greatest possible fall towards the point at which the sewage reaches the pumping-station. The works have been executed by the following firms:—Main intercepting sewers, Mr. A. Kellett; Fulford pumping plant, Messrs. J. Watt & Co.; Fulford pumping-station, foundation, and walls, Messrs. Parker & Sharp; Fulford pumping-station buildings, Mr. A. Kellett; Naburn treatment works, Messrs. Parker & Sharp; sludge-pressing plant, Messrs. Goddard, Massey, & Warner. Mr. James Mansergh (Vice-President Inst. C.E.) has acted as consulting-engineer to the scheme, and the work has been carried on under the personal supervision of Mr. James McKie, A.M.Inst.C.E., as resident engineer. The total estimated cost of the works, for which the Council has obtained borrowing powers, is 191,100*l.* The cost of the works already completed is 186,120*l.*

OSSETT SEWAGE DISPOSAL.—An inquiry was held on the 23rd inst. at Ossett by Colonel W. M. Ducat, R.E., into the application of the Ossett Town Council for borrowing powers for 3,300*l.* required for the extension of their eastern outfall works of sewage treatment. These works were constructed nearly twenty years ago by Mr. M. Paterson, C.E., of Bradford, who now explained the proposed extension, consisting chiefly of four new settling tanks, holding 180,000 gallons, and the preparation of seven acres of land for filtering purposes, besides a screening-tank, sewage-wheel, &c. The Council deal with the whole liquid refuse of their outfall district, both trade and domestic.

WATER SUPPLY OF PORTLAND, OREGON.—According to a recent report of the British Vice-Consul at Portland, the new waterworks, supplying that city with 25,000,000 gallons a day, and costing 640,870*l.*, are completed. The water is taken from Bull Run River, a clear mountain stream flowing from a lake near the base of Mount Hood, and brought in a pipe twenty-four miles long to a reservoir 404 ft. above low water on the east side of the river near Portland. From thence it is carried across the river through a submerged pipe to a reservoir in the City Park, six miles distant, at an elevation of 290 ft. above the levels of the city streets. These high-service reservoirs on the east and west sides of the river are connected with low-service reservoirs, but the water can be supplied direct to the city mains without passing through the latter. The four reservoirs have a capacity of 67,500,000 gallons, and the supply is inexhaustible.

MISCELLANEOUS.

IMPROVED LETTER-CARDS.—Messrs. Langley & Son (London) send us specimens of their patented folding letter-card within which an extra leaf is inserted, of smaller size than the outer leaf (so as to clear the line of perforation for opening), giving space for a larger letter. If the consent of the Post Office has been obtained, no doubt this arrangement will be a convenience to correspondents.

LIVERPOOL ENGINEERING SOCIETY.—A party of the members of the Liverpool Engineering Society paid a visit to the Lytham Sewerage Works, at the invitation of Dr. L. Fisher, J.P., Chairman of the Urban District Council. Mr. Paterson, of the Hermite Company, explained that the system experimentally adopted at Lytham is that known as the "Hermite" process, which briefly consists of electrolysing sea water, in order to produce chlorine, and then passing this antiseptic through the sewers, which has the effect of sterilising the sewage and of preventing the evolution of sewer gases.

ELECTRIC LIGHTING AT CARDIFF.—At a recent meeting of the Cardiff Lighting and Electrical Com-

mittee, the Mayor presiding, the Borough Engineer Mr. W. Harpur) submitted the estimate for the electric works and plant, which showed that the estimated sum of 32,500*l.* had been exceeded by 5,000*l.*, and he recommended that they apply for powers to borrow an additional 7,500*l.* for the proposed extension and other purposes. He also submitted an estimate of the working expenses for the ensuing six months for the whole of the lighting department (including gas and electricity), which he put at 5,580*l.* 10s., a sum almost identical with that of the last budget, which was 5,556*l.*

EAST RIDING ANTIQUARIAN SOCIETY.—On the 15th inst. the members of this society visited Scarborough Hall (once the home of the Earls of Northumberland, now an uninhabited house), to uncover some mounds in the park. The excavations had been undertaken by Mr. J. R. Mortimer. The field under observation had no less than 170 barrows in it, of which three were uncovered, varying in size from two to ten yards in diameter. The party, numbering upwards of fifty, then moved to the church, where Mr. J. R. Boyle, F.S.A., explained the chantries and stained-glass windows.

NATIONAL REGISTRATION OF PLUMBERS.—The annual meeting of the Devon and Cornwall Council of the National Registration of Plumbers was held at Plymouth on the 20th inst. Mr. S. J. Page presided. Mr. W. J. Addiscott and Mr. G. Hawken (Cornish Bank) were re-elected secretary and hon. treasurer respectively, and Messrs. W. N. Elliott, Harvey, and Wright were appointed auditors. The report was adopted. Mr. Wright moved the rescinding of the following resolution adopted by the Council early in the year:—"That in future all prizes and certificates won under the graded syllabus of the Worshipful Company, within a radius of ten miles, be given out at a Council meeting; beyond that distance they may be given out in the immediate neighbourhood; but all certificates of registration must be given out at Plymouth, where the candidates must take them up and sign the declaration." Mr. Ackland seconded, and the motion was carried unanimously. Mr. Wright then moved, "That the prizes be delivered under the auspices of this Council, and in the towns and districts where they are obtained." Mr. Perrin seconded, and it was carried. It was decided to entertain the suggestion of the Bristol district to send delegates to a conference to be held in that city for the purpose of considering a new rule in the examinations of the company. The secretary and Messrs. Pearse and Wright were appointed delegates.

NOTES FROM FRANCE.—The Department of "Postes et Télégraphes" has commissioned M. Eugène Grasset, the decorative painter, to make a new postage-stamp design. It may be remembered that the competition last year for a design of a new type produced nothing available.——A monument to Edmond Guillaume, the architect to the Louvre and Tuileries, has just been inaugurated at the Mont-Parnasse Cemetery. It is the work of M. Henri Guillaume, and consists of a stele with a bronze medallion portrait by Chapu ——M. J. Bernard, architect, of Asnières, has obtained the first premium in a competition for a group of schools in that township.——The new line of railway from Lozanne to Lamure (Rhône) will shortly be opened; it is eventually to be prolonged to Paray-le-Monial. This last portion of the line requires the construction of a tunnel 5 kilomètres long and a viaduct 500 mètres long. The two works together will cost 12 million francs.——At Hautefage, near Agen, an altar in white marble has been found, dating from the second century, of unusual form and bearing a number of inscriptions.——A bust of President Carnot was uncovered last week, at Cette. It is the work of M. Injalbert, the well-known sculptor.——The town of Rouen is making preparations for an artisans' exhibition to be held there in 1896.——The military engineering department has under consideration the prolongation of the strategic railway of St. Laurent from Jura to Geneva, by piercing a tunnel through Mt. Francille.——There is to be an industrial exhibition at Tunis in 1897.——M. Henri Picou, a historical painter who enjoyed some celebrity at one time, has died at Nantes, at the age of sixty-nine. He was a pupil of Paul Delaroche and Gleyre, and had received medals in the Salons of 1848 aud 1857.——The works of the painters who have competed for the Prix de Rome are at present being exhibited at the Ecole des Beaux-Arts. Those of the competitors in the architectural class will be exhibited on and after the 31st.

COMPLETION OF BURNS' MONUMENT AT AYR.—The Burns' monument at Ayr, unveiled in 1891, will, says the *Scotsman*, be completed by a bronze panel about the latter part of next month, representing "The Parting of Burns and Highland Mary," the sculptor being Mr. George E. Bissell, Poughkeepsie, New York. Three sides of the monument have already been filled. The fourth panel, fronting the west, which was left for friends in the United States to complete, will therefore soon be placed.

THE COMMISSIONERS OF SEWERS.—A report by the City Engineer showing the effect on city traffic of the opening of the Tower Bridge was brought before the Commissioners of Sewers at their last meeting on the 23rd inst., from which it appears that by this construction, London Bridge has been relieved to the extent of about 5,200 vehicles per day, and Eastcheap and Fenchurch-street by 2,200 and 2,000 vehicles respectively. At the same time the daily traffic through the Minories, Houndsditch, Liverpool-street, and Bishopsgate-street has increased, in the first-named thoroughfare by 2,200 vehicles daily, the second by 700, the third by 900, and the last by 600. In the central and western portions of the City, the amount of the traffic did not appear to have been affected by the improvement. The meeting was made special to consider a motion by Mr. H. H. Bridgman to rescind a portion of the resolutions passed at two previous meetings, so far as related to the relaying of the asphalte in the Poultry during ordinary working hours. This was the question of continuous working over again in a modified form. A letter was read by the Clerk, in which the Val de Travers Asphalte Company declared that it was difficult to fix the definite time that would be saved in working by two shifts, and that it would increase the cost of working by 15 per cent. The company was of opinion that the better course would be to have the work done by one set of men working overtime. Mr. Bridgman eventually consented to withdraw the motion.

THE SANITARY INSTITUTE.—At an examination for Inspectors of Nuisances, held at Norwich on Friday and Saturday, July 19 and 20, the following fourteen candidates were certified, as regards their sanitary knowledge, competent to discharge the duties of Inspectors of Nuisances:—F. W. Benstead, Plumstead; F. R. Blandford, Reading; J. Cossey, Loddon; H. Dunsmore, Forest Hill, S.E.; A. J. Field, Bromley; G. A. Hawes, Norwich; T. W. Howes, Norfolk County Asylum, Thorpe; C. B. W. Lloyd, Manor Park, E.; J. Marshall, Watton; T. R. Mayes, Brighton; A. J. Offer, Handcross; C. J. Parfitt, Maindee, Newport; F. Read, Norwich; J. W. Richford, Wells, Norfolk.

LEGAL.

GENERAL BUILDING LINE CASE.

IN THE COURT OF APPEAL.

THE case of Lavy & Upjohn *v.* the London County Council came before the Court of Appeal, composed of Lords-Justices Lindley, Lopes, and Rigby, on the 16th inst., it being the appeal of Messrs. Lavy & Upjohn, the owners of a house known as 391, City-road, in the parish of Islington, from the decision of a Divisional Court of Queen's Bench, given on a case stated by a Metropolitan Magistrate. Upon July 24, 1894, the appellants were charged with having, at 391, City-road, unlawfully erected a certain structure beyond the general line of buildings in the City-road without the consent in writing of the London County Council, contrary to Section 75 of 25 & 26 Victoria, cap. 102; Section 10 of 45 and 46 Victoria, cap. 14; and 51 and 52 Victoria, cap. 41.

The facts were shortly as follows:—The house, 391, City-road, was 38 ft. from the footway, and it had a forecourt which for many years was bounded by a brick wall 2 ft. or 3 ft. high, 9 in. thick, with an iron railing 5 ft. 6 in. in height. The appellants from time to time applied for leave to build upon the forecourt, but the applications were refused. Prior to 1894 the appellants erected on the dwarf wall a hoarding for advertising purposes, which was placed against the railings so as to get their support, and it had struts for additional support. The respondents (the County Council) gave notice to remove it, and on May 5, 1894, the hoarding was removed and replaced by what was now complained of—viz., a wall 11 ft. high, 14 in. thick, with its face put back 4½ in. from the line of the old dwarf wall, so that there might be a ledge to support it. On July 11 the summons was taken out, and on July 13 the architect gave his decision under Section 75 of 25 and 26 Victoria, cap. 102, as to what the building line was. That decision was appealed from, and on July 24 the appellants appeared to the summons, and the respondents asked for an adjournment, which was granted upon the terms that the rights of all parties as they were on July 24 should be preserved—namely, that the matter was to be in the same position as if the magistrate had begun to hear the appeal on July 24. Several adjournments took place from time to time, and on October 19 the architect's decision was confirmed by the appellate tribunal. By that confirmation the building-line was finally decided to be the line of the house 391, City-road. The magistrate found that the wall was erected as an advertising station, but that it was intended also to serve as a boundary-wall for the forecourt, and on December 7 he made an order upon the appellants to demolish the erection, and found, so far as it was a question of fact, that it was a structure in front of the general line of buildings. No consent to the erection being made was ever given by the respondents. The Divisional Court overruled an objection on the part of the appellants that the architect's decision had not been given on the day of the issue of the summons, and also held that the wall in question was a structure or erection within the meaning of the prohibition, and gave judgment in favour of the County Council, from which the owners, Messrs. Lavy & Upjohn, now appealed.

At the conclusion of the arguments the Lords Justices dismissed the appeal, with costs.

Mr. McCall, Q.C., and Mr. R. C. Glen appeared for the appellants, and Mr. Channell, Q.C., Mr. Forman, Mr. Daldy, and Mr. F. K. North for the County Council.

ALLEN AND ANOTHER *v.* THE LONDON COUNTY COUNCIL:

IMPORTANT CASE.

THE case of Allen and another *v.* the London County Council came before the Court of Appeal, consisting of Lords Justices Lindley, Lopes, and Rigby, on Monday last, for judgment, it being the appeal of the plaintiffs from the decision of Mr. Justice Wills and Mr. Justice Wright, sitting as a Divisional Court of Queen's Bench, on a special case stated by a metropolitan police magistrate, who made an order for the demolition of a building in the metropolis as being beyond the building line. The case was reported in the *Builder* for July 6. The facts are shortly these:—A complaint was made to the magistrate by the London County Council that the appellants began to erect a building beyond the general line of buildings on the north-western side of Birchington-road, Kilburn, without the consent of the County Council, contrary to Section 75 of the Metropolis Management Act, 1862. It appeared that the appellants, on November 13 last, commenced to build four shops and houses upon the land at the corner of Birchington-road. The front in Birchington-road extended 16 ft. beyond the general line of buildings, as determined by the certificate of the Superintending Architect of the London County Council, who stated in it that the main fronts of the buildings in a certain row of houses formed the general line of buildings on the north-western side of Birchington-road, in which road the building in question is situate, and that the building in question would project beyond the prolongation of the said general line. The appellants' contention was, that the architect had not, by his certificate, found that the building was situate in the "street, place, or row of houses," described as the north-western side of Birchington-road, and that if he had so found he had placed the building in a "street, place, or row of houses" in which the same was not situate. The respondents' contention was, that the certificate had determined that the building was situate in the Birchington-road, and that such determination was binding on the magistrate. The learned magistrate felt bound by the decision in the case of the "London County Council *v.* Cross," and directed the demolition of so much of the building as was beyond the line, and the Divisional Court upheld his decision, hence the present appeal.

The questions for the Court to determine were (1) Whether the certificate showed that the house in question was situate in the street, place, or row of houses on and for which the general line of buildings was determined; (2) Whether it was the duty of the architect to decide and find the situation of the appellants' building, and, if so, whether his decision was binding on the magistrate.

Lord Justice Lindley, in giving judgment, said that he was of opinion upon the construction of the certificate that it did decide that the plaintiff's house was situate in the Birchington-road. The question was whether, under Section 75, this point was to be decided by the Superintending Architect. Continuing, he (his Lordship) said that the following circumstances must co-exist in order to justify an order of demolition under Section 75—viz.: (1) There must be a building, structure, or erection of some sort; (2) That building, structure, or erection must be erected with the written consent of the Metropolitan Board of Works (or now of the County Council). (3) That building, structure, or erection must be in some street, place, or row of houses. (4) That street, place, or row of houses must have a general line of building. (5) This line of building, viz., the line of building of the street, place, or row of houses in which the building complained of is situate, must be decided by the Superintending Architect appointed by the Metropolitan Board of Works (or now by the County Council). (6) The building, structure, or erection must be erected beyond the line so decided. What was left to the decision of the architect was the existence and exact position of the general line of building of the street, place, or row of houses (if any) in which the building, structure, or erection complained of has been erected. In case of dispute the Magistrate must decide all the other matters referred to, viz., whether the building, &c., complained of is one to which Section 75 applies, especially having regard to Section 74; whether the necessary consent has been given; whether the building, &c., is in a street, place, or row of houses, "street" being interpreted as directed in Section 112; whether the building, &c., has been erected beyond the general line of building for that street, &c., as decided by the Superintending Architect. Such was, in his opinion, the true construction of the section and of the decision in "Spackman *v.* Plumstead Board of Works," which set at rest the doubt whether the magistrate could review the architect's decision as to the general line of building. So far the interpretation of the statute was reasonably plain. But then it was said that the question still remained, who was to determine whether the building complained of is in the particular street, place, or row of houses to which the architect's

certificate is applicable. This was the point on which Lord Watson and Lord Bramwell differed in the case of "Barlow *v.* The Vestry of St. Mary Abbott's." A careful perusal of Lord Herschell's judgment had led him to the conclusion that he agreed with Lord Watson, and that Lord Fitzgerald took the same view. There was much to be said for that interpretation of the Act, for the object of the Act being to regulate lines of building, the architect, rather than the magistrate, seemed naturally to be the person to say to what line of building a particular house should conform. The general line of building which the architect was to decide was "such general line," and by "such" was meant the general line for the street, &c., in which the house in question was. The architect might no doubt assume, without deciding, that the building complained of was in a particular street, place, or row of houses, and simply certify the general line of buildings of that street, &c., leaving the magistrate to determine whether, after all, the building was in the street, &c., to which the certificate applied. But that would be to deprive the architect's certificate of half its value, and the interpretation which left him to decide what building line was to be conformed to, seemed to be preferable to an interpretation which left that question to the magistrate. For those reasons, and thinking as he did, that that view was more in conformity with the decision of the House of Lords in "Barlow's Case" than the interpretation contended for by the appellants, he came to the conclusion that the appeal ought to be dismissed.

Lords Justices Lopes and Rigby concurring, the appeal was accordingly dismissed with costs.

Mr. Channell, Q.C., and Mr. Macmorran appeared as counsel for the appellants; while Mr. Horace Avory and Mr. Daldy represented the respondents.

LONDON COUNTY COUNCIL *v.* J. SANDERS.

AT the Marylebone Police Court a few days since John Sanders, a builder, of 49, Lisburne-road, Hampstead, was summoned by William Smallpeice, District Surveyor for East Hampstead, for using mortar the ingredients of which did not conform to the requirements of the by-laws of the London County Council. The evidence was that the defendant was the builder of a house known as 5, Constantine-road, Hampstead, in the erection of which he had used mortar which was deficient in lime to the extent of fifteen degrees. Mr. Nimmo, for the defence, admitted that his client had committed a technical breach of the by-law, but contended that similar mortar had been commonly used in the Metropolis for years past. He added that if the prescribed amount of lime was used the mortar would set too quickly. A specialist called for the defence stated that the mortar used was good enough for "speculative building," but it was not "high-class." The magistrate, having remarked upon the absence of any professional gentleman to conduct the case for the London County Council, observed that the defendant's own witness had damned the case by his faint praise of the article used. It was clear that it was not up to the standard which the public had a right to expect. The public were absolutely at the mercy of the builders, and if they used inferior mortar it was nothing less than a fraud upon the persons who took the house. He imposed a fine of 40s. and 23s. costs.

CASE OF EXTRAORDINARY TRAFFIC: BULLINGDON HIGHWAY BOARD *v.* J. PLUMRIDGE.

AT the Bullingdon Division Petty Sessions, held at the County Hall, Oxford, on the 13th inst., Jonathan Plumridge, timber merchant, High Wycombe, Bucks., was summoned at the instance of the Bullingdon Highway Board, to show why an order for payment of 64*l.* 2s. 6d. should not be made on him owing to certain extraordinary traffic upon the highway at Great Milton.

Henry Matthews, roadman, Great Milton, said he saw Mr. Plumridge's engine with two wagons going down to Haseley Copse at the beginning of March. They came back loaded, and he should say that the engine, trucks, and load weighed about 30 tons. The load comprised about twelve trees. This was a district road, and most of the traffic would be of an agricultural character. The heaviest wagon would weigh about two tons and a half. When the engine and wagons had passed over he saw a number of ruts in the road. He first noticed the ruts on March 1, and as the heavy loads continued to pass the ruts became worse. The wheels broke through the metal of the road. The repairs necessary were considerable, the road having to be re-made with hard stones; a steam-roller was also required. The ruts in some places on the road were a foot deep and a yard wide.

Cross-examined: On March 1 the ruts were from 6 to 8 in. deep. He knew that a traction engine not belonging to Mr. Plumridge had stuck in the road from ten in the morning to three in the afternoon about April 4. It was only partly on the road, having been drawn on one side to allow a carriage to pass. The wheel on the road did not stick at all.

Other evidence of a similar description having been given,

Mr. Charles Ward Brabant, District Surveyor for the Bullingdon Highway Board, said the road in question was 682 yards long, and was in fair condition before the damage was done. From January 1 to February 28 there was a severe frost, and after it broke up he received a complaint about the road. He saw it on March 15, and found deep and dangerous ruts in it. In some places they were 14 in. deep, the crust of the road being broken through and the clay displaced. Witness ordered temporary repairs, and subsequently received instructions to make the road good. The cost of the work was 64*l.* 2s. 6d. In 1893 67*l.* 17s. 6d. was expended on the district roads in the parish of Great Milton, which worked out to 12*l.* 6s. 10d. a mile. In 1894 it was 97*l.* 1s., or 17*l.* 13s. a mile; and in 1895 104*l.* 7s. 2d., or 18*l.* 9s. 6d. a mile, an average of 89*l.* 8s. 7d., or 16*l.* 5s. 3d.

Mr. John Henry Goodson, District Surveyor for Watlington, said he went along the road at the beginning of April, and found it completely broken up. He thought the amount claimed was a moderate sum for making the road good.

Mr. Henry James Tollit, County Surveyor for Oxfordshire, said he saw the road, and found the surface broken through and the bed displaced. He thought the load was excessive.

This was the case for the plaintiffs.

Charles Plumridge, son of defendant, said the first time the engine went to Haseley was on February 27. It went again on March 1, March 4, March 5, and March 7. Each time they returned the following day. They never took more than one truck at a time up the hill, and had only one tree on each. On the last day two trucks were taken, but they went up the hill one at a time. There were no ruts made in the road, nor was it damaged in any way. On March 8 there was a thaw, and the road began to bend a little. After that day the engine went a different way, and never went up the hill again.

Cross-examined—He had heard what Mr. Brabant said about there being ruts 14 in. deep on March 15. He went over the previous day, and there were then no ruts whatever.

James Murrant, defendant's engine-driver, gave similar testimony, and entirely denied the damage to the road.

Cross-exemined—Up to March 15 there were no ruts in the road.

Other evidence having been given, the Chairman said the Bench had come to the conclusion that, having regard to the construction of the road, the ordinary traffic of the district, and the condition of the weather, that injury was caused by extreme traffic and excessive weight of the defendant's traction-engine. They accordingly found in favour of the Highway Board, with costs.

ACTION TO RECOVER COMPENSATION IN AN ARBITRATION UNDER THE METROPOLIS MANAGEMENT ACT, 1862.

THE case of the Mayfair Property Company, Limited *v.* The London County Council came before the Court of Appeal, consisting of the Master of the Rolls and Lords Justices Kay and A. L. Smith, on Tuesday and Wednesday last, it being the appeal of the plaintiffs from a decision of Mr. Justice Wills in the Queen's Bench Division in an action brought by the plaintiffs to recover from the defendants compensation under the 74th Section of the Metropolis Management Act, 1862, for having been required to set back a new building situate at St. John's Wood. The case was reported in the *Builder* of May 11 last. The facts were shortly as follows:—The plaintiffs in December, 1892, acquired certain premises at the corner of Hall-road and Grove End-road, St. John's Wood, under a building lease for the purpose of immediately rebuilding on the site. The old buildings were accordingly pulled down, and the plaintiffs immediately commenced to erect a large building to be let out in flats. The defendants thereupon required the plaintiffs to set their building back, in accordance with the certificate of the Superintending Architect, to a line which the plaintiffs alleged was at a greater distance than 50 ft. from the highway. The plaintiffs pulled down the building, carried it back to the line fixed by the Superintending Architect, and claimed compensation under Section 74 of the Metropolis Management Act, 1862. After the building had been completed the plaintiffs appointed an arbitrator to assess the amount of compensation to which they were entitled, but the defendants refused to have anything to do with the arbitration, on the ground that their notice was given under Section 75 of the Metropolis Management Act, and not under Section 74. The plaintiffs' submission was that the terms of the notice of the defendants came within Section 74, and that they were entitled to the sum of 7,490*l.*, which had been awarded them by the arbitrator, but the learned judge in the Court below gave judgment for the defendants with costs, hence the present appeal.

Mr. Channell, Q.C., and Mr. R. C. Glen appeared for the plaintiffs (the appellants), and Mr. Cripps, Q.C., and Mr. English Harrison for the defendants (the respondents).

Their Lordships, without calling upon counsel for the respondents, dismissed the appeal with costs.

CAPITAL AND LABOUR.

THE LONDON BUILDING TRADE.—On the 21st inst. the London Building Trades' Federation celebrated, in Hyde Park, the third anniversary of its formation. After the signing of the agreement with the master builders in 1892, which until last month governed the conditions of work in the building trade within a twelve-mile radius of Charing Cross, steps were taken to bring about a federation of all the trade unions in the building trade. The twenty-four unions now belonging to it have some 38,000 members in the London area. There were two platforms in the Park, at one of which Mr. Joseph Verdon, the secretary of the London Building Trades' Federation, presided, and Mr. Stevenson, the secretary of the United Builders' Labourers Union, at the other. The following were the two resolutions which were put and carried from each of the platforms:—"(1) That this meeting of building trades workers considers that the action of the Central Association of Master Builders in terminating the agreement entered into in 1892 is both unnecessary and uncalled for, and if persisted in can have but one effect, and that the total disruption and dislocation of the building industry; and this meeting pledges itself to resist to the utmost any violation of the said agreement. (2) That this mass meeting of the workers employed in the building trades considers that the time has arrived when active steps should be taken to secure the direct representation of the building trades upon all local and municipal bodies, and pledges itself to use all legitimate means at its disposal to carry the same into effect; and it further resolves not to support any candidate for such bodies, who is not pledged to vote for trade union rates of wages and that conditions of work shall be observed on all contracts."

BRISTOL BUILDING TRADE DISPUTES.—As an outcome of a conference between representatives of the Bristol Master Builders' Association and of various trade organisations, Rule 11 has been amended to read as follows:—"Should a dispute at any time take place between any department of the building trade and their employers, or any question of disputed interpretation or infringement of these rules arise that cannot be mutually arranged between the parties affected, a Board of Conciliation shall be formed, composed of four employers and four members of the trade affected, to whom all questions shall be referred. The decision of the majority of such board shall be binding on all parties concerned. Such Conciliation Board shall meet within thirty-six hours of the information being laid. That, in case of an equal division each body shall appoint an arbitrator, and the two arbitrators shall themselves, in case of disagreement, appoint an umpire, the decision of such arbitrators, if unanimous, or of the umpire to be final, binding, and conclusive." The amended rule has been signed by the representatives of the bricklayers, labourers, carpenters and joiners, plasterers, and painters.

MEETINGS.

SATURDAY, JULY 27.

Architectural Association.—Visit to Charterhouse and Godalming. 1.50 p.m. train from Waterloo.

WEDNESDAY, JULY 31.

Institution of Junior Engineers.—Visit to the Ice Works and Cold Stores of the Linde British Refrigeration Company, Shadwell. 6.30 p.m.

SATURDAY, AUGUST 3.

Liverpool Engineering Society.—Visit to the site of the Elan Water Supply of the Birmingham Corporation at Rhayader, Radnorshire.

RECENT PATENTS:

ABSTRACTS OF SPECIFICATIONS.

13,328.—KILNS: *J. Onions.*—This invention relates to kilns for burning and drying bricks, tiles, &c., in which the burning is effected on the down-draught system. A kiln is constructed having narrow flues or openings in the floor through which the hot gases pass, with floor spaces between, on which the goods can be stacked in parallel lines across the kiln. For regulating the flow of hot gases, and the heat of the kiln, a number of dampers are suitably arranged, by means of rods, for closing, wholly or partially, the aforementioned flues or openings.

13,867.—CHIMNEYS: *H. Fletcher.*—For preventing down-draught in chimneys, a number of outlet holes are left in the shaft near the chimney top, each outlet opening into a short tube which points radially downward at an angle of 45 deg. In conjunction with these is employed an internal ring in the form of a truncated hollow cone, which is fixed in the chimney with its bottom edge below the outlet openings.

15,156.—FIREPROOF FLOORS: *J. Roy.*—This patent has to do with the manufacture of fireproof floors, and relates to the employment and arranging of joists and webbed slabs of fireclay, the latter suspended from the joists by means of nooks, and forming, in conjunction with the joists, a continuous centering which is filled with concrete.

1,228.—VENTILATORS: *J. Jonas.*—Deals with a room ventilator consisting of two wheels which rotate in opposite directions, the fans being differently coloured, and provided with cut-out openings for the purpose of producing chromatrope-like effects.

2,876.—TRAP: *R. Bennett.*—Consists of an intercepting trap similar in shape to those generally used, with the exception that, from the water-seal and to the overflow, the trap is made of a bell-shape, and terminates in a vertical chorded outlet bend, with an inspection or ventilating opening in the top.

8,469.—WEDGE:—*F. Robinson.*—A wedge for preventing vibration in windows and doors. Consists of a narrow piece of metal having at one end a counter-sunk hole, and at the other a wedge-shaped piece, the thin edge of which projects at right-angles. The wedge is allowed to turn on a screw which fits through the counter-sunk hole.

8,453.—LATHS; *W. Echstein and another.*—Relates to metallic lathing for ceilings, &c., having flat or trough-

COMPETITION AND CONTRACTS.

COMPETITION.

Nature of Work.	By whom Advertised.	Premiums.	Designs to be delivered.
*School Buildings	Swansea School Board	15*l.* 15s., 10*l.* 10s.	No date

CONTRACTS.

Nature of Work or Materials.	Architect, Surveyor, or Engineer.	By whom Required.	Tenders to be delivered.
Granite Road Metal	Stamford T C	J. Richardson	July 30
Cast-iron Pipes, Valves, &c. Summerseat	Ramsbottom (Lancs.) U.D.C.	T. Nuttall	do.
Extension of Sewer, Acrefair, Ruabon	Wrexham R.D.C.	J. P. Evans	do.
Brick Outfall Sewer (1,500 yds.)	Tunbridge Well Corp.	T. E. W. Mellor	do.
Church (St. John), Wortley, Leeds		Kay & Twist	do.
Enlargement of Club Premises, Rushden, Northants		H. H. Packer	do.
House, Shops, &c. Blaydon-on-Tyne	E. T. Peacock	W. Allen	do.
Store Buildings, Corbridge-on-Tyne	West Wylam, &c. Co-op. Soc. Lim.	*Official*	do.
Additions, &c. in Cattle Market	Doncaster Corp	do.	do.
*Road Works	Lewisham Bd. of Wks	do.	do.
Leicestershire Granite, &c. (300 tons), near Barnet	South Mimms R D.C.	do.	do.
Widening Middlebarrow-lane, &c. near Ulverston, Lancs.	Lower Furness District Highway Board	do.	July 31
Paving, Whalley-road, and Sewering, Mill-street	Clayton-le-Moors U.D.C	A. Dodgeon	do.
School, Vestry, &c. Kingsclere	Trustees	W. H. Bell	do.
Sewerage Works, George-street, &c.	Handsworth (Staffs.) U.D.C.	E. Kenworthy	do.
Alterations, &c. to School, Cwmaman	Aberdare School Board	T. Roderick	do.
Sewers and other Works, Manchester-road, &c.	Rochdale Corp.	S. S. Platt	do.
Rebuilding Church, Carlton, Miniott, near Thirsk		C. H. Fowler	do.
Additions to Workhouse, Lanchester, Durham		J. W. Rounthwaite	do.
*Fire Mains and Hydrants, Brooks Hospital	Met. Asylums Board	T. W. Aldwinckle	Aug. 1
*Boundary Walls, Brook's Hospital	do.	do.	do.
*Water, Steam, and Gas Mains, Brook's Hospital	do.	do,	do.
*Remodelling of Hot-water Supplies, S.E. Hospital	do.	*Official*	do.
Additions to Schools near Chepstow	Mathern School Board	do.	do.
Cast-iron Pipes (3 miles)	Macclesfield Corp.	do.	do.
Additions, &c. to National Schools (St Edmunds), Salisbury		W. H. Ralford	do.
*Repairs to Baths, Hornsey-road	Islington Baths and Washhouses Commrs.	J. Harding & Son	do.
		A. H. Tiltman	do.

CONTRACTS—*Continued.*

Nature of Work or Materials.	By whom Required.	Architect, Surveyor, or Engineer.	Tenders to be delivered.
Pipe Sewers, &c. Ludworth	Durham R.D.C.	G. Gregson	Aug. 2
Cooling House	Belfast Corp.	*Official*	do.
Four Houses, Filey, Yorks		S. Dyer	Aug. 3
Stable and Coachhouse, Aikenshill, Foveran, Aberdeen		W. Ruxton	do.
Additions to Arbrochie School, near Aberdeen		do.	do.
*Sewerage Extension	St. Anne's-on-Sea U.D.C.	H. Bancroft	Aug. 5
Offices, Warehouses, &c. Hop Market and Broad-street	Hereford Corp.	J. Parker	do.
Sewering and Drainage Works	Whitefield (Lancs.) D.C.	*Official*	do.
Granite Kerbing (1,350 yards), &c.	Bootle (Lancs.) Corp.	do.	Aug. 6
*Road Materials	Maidstone U.D.C.	F. Bunting	do.
*Supply of Terra Cotta	Manchester Corp.	Spalding & Cross	do.
Refuse Destructor Buildings, Lumley-st	Sheffield Corp.	C. F. Wike	Aug. 7
Flint Road Metal	High Wycombe (Bucks) R.D.C.	E. Birks	do.
Pipe Sewers, Todmorden-road	Littleborough (Lancs.) U.D.C.	G. H. Wild	do.
*Laboratory, Clement's Inn	Com. of H.M. Works	*Official*	do.
*Broken Granite, Chippings, and Kerb	Greenwich Bd. of Wks.	do.	do.
*Making-up Roads	do.	do.	do.
Rebuilding "Rose and Crown" Inn, Gleaston, Lancs		J. W. Grundy & Son	do.
*Erection of Schools	Harwich Sch. Bd.	J. W. Start	Aug. 8
School, Oatlands, near Harrogate	Pannal Sch Bd.	T. A. Buttery	do.
Paving and Kerbing Oldham-road, (13,084 square yards)	Failsworth (Lancs.) U.D.C.	C. J. Lomax	do.
Subway and Office, Lockwood Station, Yorks	L. & Y. Railway Co.	*Official*	do.
Repaving, &c. Cambridge-street	Aylesbury U.D.C.	do.	do.
*Sea Wall, Groyne, &c.	Brighton Town Council	F. J. C. May	Aug 9
C. I. Pipes for the Town Water Supply	Castlebar (Ireland) Un.	C. Mulvany	Aug. 10
Schools, Trooper-terrace, Caddy Field	Halifax Sch. Bd.	J. F. Walsh	Aug. 12
*Erection of Schools	Romford Sch Bd.	C. Bell	do.
*Workmen's Dwellings, Bethnal Green	London County Council	*Official*	do.
*Rebuilding Portion of Steeple	Wellington (Salop) Joint Burial Com.	do.	Aug. 13
*Post Office, Tipton	Com. of H. M. Works	do.	do.
Road Diversion, near Longshaw Farm, Cliviger	Lancs C. C.	do.	do.
*Two Houses, for Coast Guards, Drove End, Lincs.	The Admiralty	do.	do.
*Additions to Asylum	Wilts County Asylum	do.	Aug. 17
*Sewerage Works	Erith U.D.C	G. Chatterton	Aug. 19
Forty-nine Cottages, Roads, &c. Brampton, Chesterfield	Lancs. Derby, and E C. Railway Co	C. A. Adams	No date
Hall and Premises, Harrogate	Salvation Army	H. E. & A. Bown	do.
Rebuilding No. 9, Usher's Quay, Dublin	M. Quaid		do.
House, Burley-road, Menston, Yorks		F. Wild	do.
Pair Villas, Mansfield-road, Nottingham		W. Mortimer & Son	do.
Alterations to "Cooper's Arms," Litchurch-street, Derby		S. Taylor	do.
New Street, Recreation Ground, Derby		E. R. Ridgway	do.
Brick Sewers and Street Works, Bradford Moor, Yorks		W. B. Woodhead & Son	do.

Those marked with an asterisk (*) are advertised in this Number. *Competition, p.* iv. *Contracts, pp.* iv., vi., viii., *and* xviii.

shaped corrugations, combined with trapezoidal loops arranged in the troughs of the corrugations for engaging and holding the plaster.

NEW APPLICATIONS FOR LETTERS PATENT.

JULY 9.—13,198, H. Akeroyd, Water-closets.—13,233, H. Lake, Repairing Asphalte Pavements.—13,258, W. Bailey, Mitre Cutting and Shooting Block.

JULY 10.—13,276, H. Vaughan, Hanging and Fastening Window Sashes.—13,280, J. Johnson, Combined Flanged Stench Trap and Cesspool.—13,293, D. Keith, Window Sash Panes.—13,324, T. Southgate and H. Downton, Bricks.

JULY 11.—13,357, L. Barwise, Preventing the bursting of lead or other pipes or tubes through the action of frost.

JULY 12.—13,421, J. Thomas and others, Slate Quarrying Machinery.—13,452, J. Wagstaff, Bricks or Building Blocks.—13,454, G. Jennings and others, Supplying Water to Water-closets, &c.

JULY 13.—13,522, W. Illingworth, Ovens or Kilns.—13,535, J. Fisher, Wall Coverings.

PROVISIONAL SPECIFICATIONS ACCEPTED.

11,586, H. Doulton and A. Smith, Tiles.—11,782, C. Dargie and S. Cooke, Supporter or fastener for window-sashes, sliding doors, or sliding screens.—11,809, J. Hunt, holding doors partially open when on chain.—11,862, W. Hall, Springs or Spring devices, applicable for counter-balancing window-sashes, &c.—11,896, C. Monday, Vertically sliding and retaining at any level window or other sashes or doors without lines or weights.—12,118, T. Westley. Draught, dust, and weather excluder for doors.—12,368, C. Jamieson, Window-sashes.—12,382, J. Bloomfield, Plaster.—12,391, W. Joy, Drying slurry by the waste heat from cement kilns.—12,473, A. Long, Water-apparatus for lavatory basins, &c.—12,475, S. and M. Adams, Gully and other Traps and Grates connected therewith.

COMPLETE SPECIFICATIONS ACCEPTED.

(*Open to Opposition for Two Months.*)

16,462, W. Hodgson, Water-closets.—6,109. S. and M. Adams, Flushing Syphons.—7,914, C. d'Enghien and others, Kilns or Ovens for firing terra-cotta, &c.—11,344, H. Thomson, Flushing Water-closets.

SOME RECENT SALES OF PROPERTY:

ESTATE EXCHANGE REPORT.

JULY 13.—By *Messrs. Spelman* (at Norwich): "The Grange," Bramerton, Norfolk, and 152 a. 3 r. 30 p., f., 5,700*l.*; a freehold house, stabling, &c., adjoining 1 a. 3 r. 7 p., f., 330*l.*; the Church Farm, 179 a. 1 r. 31 p., f. and c., 3,500*l.*; three freehold cottages, adjoining, c., 115*l.*; a house and two enclosures of land, 14 a., f., 755*l.*; an annual rent-charge of 1*l.*, 22*l.*; the Willows Farm, Metfield, Suffolk, 50 a. 2 r. 1 p., f., 700*l.*

JULY 15.—By *G. B. Smallpiece:* "Church House Farm," Aldham, Essex, 272 a. 3 r. 37 p., f., 2,700*l.*; "Thurgoes Farm," Copford, Essex, 40 a. 2 r. 21 p., f., 440*l.*—By *L. Farmer:* 57, Kingsdown-rd., Holloway, u.t. 68 yrs., g.r. 6*l.* 6s., r. 35*l.*, 255*l.*—By *P. Hodson:* 25, Windsor-rd., Holloway, u.t. 56 yrs., g.r. 5*l.* 5s., e.r. 34*l.*, 320*l.*; 77 and 79, Shaftesbury-rd., Crouch Hill, u.t. 80 yrs., g.r. 16*l.*, 66o*l.*—By *Waterer & Sons:* "Anthony's Ivess," and 1 a. 2 r. 35 p., Horsell Common, Surrey, f., 430*l.*—By *G. B. Hilliard & Son:* Great Slamsey's Farm, White Notley, Essex, 305 a. 0 r. 11 p., f., 2,400*l.*; a tithe rent-charge of 48*l.* per annum, Horndon, Essex, 600*l.*; "The Beeches," Wickford, Essex, a messuage adjoining, and 2 enclosures of land, 31 a. 2 r. 27 p., f., 1,700*l.*; "The Lodge" and "Lynton House," f., r. 48*l.*, 650*l.*; two houses and premises, Wickford-st., f., 96o*l.*; house, shop, and shed, f., r. 28*l.*, 70o*l.*; butcher's shop, slaughter-house, and cottage, f., 250*l.*; "The Swan Inn, beer-house, f., r. 30*l.*, 1,350*l.*—By *King & Chasemore:* Hill's Place, Horsham, Sussex, 42 a. 2 r. 14 p., f., 3,000*l.*; an enclosure of land adjoining, 9 a. 0 r. 3 p., f., 850*l.*; Blackbridge Cottages, f., r. 24*l.*, 500*l.*; Durrant's Farm, Shipley, Sussex, 49 a. 1 r. 11 p., f., 725*l.*; "Dragons" and "Broomfield," 69 a. 1 r. 16 p., f., 795*l.*; "Little Hoes" and "Hill Field," 31 a. 3 r. 9 p., f., 320*l.*; Spencer's Farm, Horsham, Sussex, 57 a. 0 r. 35 p., f., 3,750*l.*—

JULY 16.—By *Elgood & Fuller:* an improved rental of 133*l.* 9s., per annum, for 6½ yrs., Wellington-sq., &c., Gray's Inn-rd., 350*l.*; 46, 72, 76, 78, 80, 82, 86 and 94, Fortess-rd., Kentish Town, u.t. 18 yrs., g.r. 92*l.* 4s., r. 341*l.*, 885*l.*; 43, North Crescent Mews, St. Pancras, u.t. 11 yrs., g.r. 8*l.* 8s., r. 16*l.*, 15*l.*—By *Weatherall & Green:* 36, Belsize-pk., Hampstead, u.t. 56½ yrs., g.r. 30*l.*, r. 200*l.*, 2,300*l.*; 37, Buckland-cres., u.t. 56½ yrs., g.r. 15*l.*, r. 90*l.*, 1,120*l.*—By *Debenham, Tewson, & Co.:* 2, Orange-st., Holborn, f., r. 104*l.*, 900*l.*; 155, Peckham Rye, Peckham, f., r. 70*l.*, 1,000*l.*; 2 freehold houses and shops, High-rd., Farningham, Kent, r. 45*l.*, 69o*l.*; four cottages, smithy, &c., High-rd., f., r. 70*l.* 6s., 705*l.*; four shops and houses, High-rd., f., r. 76*l.*, 1,220*l.*; 1 to 6, Elizabeth-pl., f., r. 62*l.* 8s., 56o*l.*—By *Driver & Co.:* 68, High Holborn, Holborn, f., r. 160*l.*, 3,000*l.*—By *Rutley, Son, & Vine:* 68, Crowndale-rd., Camden Town, u.t. 34 yrs, g.r. 30*l.*, r. 112*l.*, 470*l.*; 12, Bayham-st., u.t. 35 yrs., g.r. 18*l.*, r. 48*l.*, 145*l.*, 23 and 25, Bayham-st., u.t. 34 yrs., g.r. 30*l.*, r. 70*l.*, 330*l.*; 19, Burton-cres., St. Pancras, u.t. 11 yrs., g.r. 31*l.* 10s., e.r. 80*l.*, 80*l.*; 14, Seymour-st., u.t. 12½ yrs., g.r. 7*l.*, e.r. 60*l.*, 105*l.*—By *Chinnock, Galsworthy, & Chinnock:* Enclosures of land, Stoken Green, Winchfield, Hants, 30 a. 0 r. 17 p., f., 750*l.*; two bldg. sites, Hazeley Heath, 15 a. 2 r. 30 p., f., 1,280*l.*; James' Farm, near West Green, 101 a. 0 r. 19 p., f., 3,000*l.*; West Green House, West Green, 62 a. 0 r. 5 p., f., 3,900*l.*; West Green Farm, 48 a. 3 r. 22 p., f., 970*l.*; two enclosures of land, adjoining, 5 a. 1 r. 11 p., f., 150*l.*; three freehold cottages, West Green, 0 a. 3 r. 31 p., 190*l.*—By *Osborn & Mercer:* Parts of the Wethersfield Manor House Estate, near Braintree, 344 acres, f., including timber, 4,786*l.*—By *Walton & Lee:* St. John's Lodge, North End-rd., Fulham, area 24,000 ft., f., 5,700*l.*

JULY 17.—By *R. Price & Son:* 12, Offerton-rd., Clapham, u.t. 72 yrs., g.r. 6*l.* 10s., e.r. 42*l.*, 350*l.*; 115, Bedford-rd., f., e.r. 38*l.*, 400*l.*; 18, Lambourne-rd., u.t. 49 yrs., g.r. 6*l.*, r. 32*l.*, 220*l.*—By *T. G. Wharton:* "Tower House," Orpington, Kent, f., 550*l.*; 28, Cavonr-st., Newington, u.t. 47 yrs., g.r. 6*l.*, r. 31*l.*, 285*l.*—By *Dyer, Son, & Hilton:* "Gatefield House," Clarendon-rd., Lewisham, u.t. 62½ yrs., g.r. 17*l.* 10s., 300*l.*; 3, Eliot Cottages, Blackheath, u.t. 58¾ yrs., g.r. 6*l.*, r. 35*l.*, 310*l.*—By *D. Smith, Son, & Oakley:* A copyhold ground-rent of 40*l.*, The Mall, Chiswick, reversion in 11 yrs., 1,700*l.*; Pines Farm, Maidstone, 25 a. 0 r. 16 p., f., 1,500*l.*; enclosure of building land, 4 a. 1 r. 25 p., f., 1,300*l.*; enclosure of land, Chart Sutton, 13 a. 1 r. 12 p., f., 230*l.*; enclosure of woodland, Bearsted, 2 a. 0 r. 21 p., f., 100*l.*

JULY 18.—By *Debenham, Tewson, & Co.:* F.g.r. of 700*l.*, Cree Church-lane, City of London, reversion in 75½ yrs., 19,785*l.*; 30, Bow-st., Covent Garden, f., r. 200*l.*, 6,500*l.*; 3, Duke-st., Portland-pl., u.t. 11 yrs., g.r. 20*l.*, r. 115*l.*, 620*l.*; "South Cottage," Stanwell Moor, Middlesex, and three other cottages, 1 a. 0 r. 32 p., f., 750*l.*; two freehold cottages and 1 a. 0 r. 36 p., Spout-lane, 250*l.*

[*Contractions used in these Lists.*—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; e.r. for estimated rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; yd. for yard, &c.]

PRICES CURRENT OF MATERIALS.

TIMBER.

Greenheart, B.G.	ton	8/0/0 0/0/0
Teak, E.I.	load	10/0/0 16/0/0
Sequoia, U.S. ft. cu		1/10 2/2
Ash, Canada	load	2/15/0 4/0/0
Birch, do.		2/5/0 3/10/0
Elm, do.		3/10/0 4/15/0
Fir, Dantsic, &c.		1/15/0 3/10/0
Oak, do.		2/15/0 4/15/0
Canada		6/0/0 7/10/0
Pine, Canada red		0/0/0 0/0/0
Do. Yellow		2/15/0 5/0/0
Lath, Dantsic, fath		4/10/0 5/10/0
St. Petersburg		5/0/0 6/10/0
Wainscot, Riga, &c., log		4/10/0 6/10/0
Odessa, crown		4/10/0 6/10/0
Deals, Finland		
2nd & 1st std	100	7/0/0 8/10/0
Do. 4th & 3rd		7/0/0 8/0/0
Do. Riga		7/0/0 8/0/0
St. Petersburg, 1st yellow		9/10/0 10/0/0
Do. 2nd yellow		7/10/0 9/0/0
Do. white		8/0/0 9/10/0
Swedish		7/0/0 15/10/0
White Sea		7/10/0 15/0/0
Canada, Pine 1st		22/0/0 24/0/0
Do. do. 2nd		15/10/0 17/10/0
Do. do. 3rd, &c.		8/5/0 10/10/0
Do. Spruce, 1st		9/0/0 10/10/0
Do. do. 3rd and 2nd		6/10/0 7/10/0
New Brunswick		6/0/0 7/0/0
Battens, all kinds		5/0/0 21/0/0
Flooring boards, sq., 1 in. prep. 1st		0/9/6 0/14/6
Do. 2nd		0/6/6 0/11/6
Other qualities		0/4/6 0/7/6
Cedar, Cuba	ft.	/3 /4
Honduras, &c.		/3 /4½
Mahogany, Cuba		/3 /6
St. Domingo, cargo av.		/3 1/0
Mexican do. do.		/3 /4
Tobasco do. do.		/3½ /6
Honduras do.		/3½ /5½
Box, Turkey	ton	4/0/0 15/0/0
Rose, Rio		7/0/0 16/0/0
Bahia		6/0/0 15/0/0
Satin, St. Domingo		0/0/5 0/1/0

TIMBER (*continued*).

Satin, Porto Rico		0/0/6 0/1/6
Walnut, Italian		0/0/3½ 0/0/7

METALS.

Iron—Pig, in Scotland	ton	2/5/1½ 0/0/0
Bar, Welsh, in London		5/12/6 5/15/0
Do. do. at works in Wales		5/2/6 5/5/0
Do. Staffordshire, in London		6/0/0 6/10/0
COPPER—British cake and ingot		46/15/0 47/5/0
Best selected		47/15/0 48/5/0
Sheets, strong		54/0/0 0/0/0
Chili bars		44/8/9 44/13/9
YELLOW METAL	lb	0/0/4½ 0/0 4½
LEAD—Pig, Spanish	ton	10/15/0 10/17/6
English com. brands		10/17/6 11/0/0
Sheet, English, 6 lbs. per sq. ft. and upwards		11/10/0 0/0/0
Pipe		12/0/0 0/0/0
ZINC—English sheet	ton	18/10/0 0/0/0
Vieille Montagne		19/10/0 0/0/0
TIN—Straits		65/12/6 66/2/6
Australian		66/7/6 66/17/6
English Ingots		67/15/0 68/0/0
Banca		65/0/0 65/5/0
Billiton		64/10/0 64/15/0

OILS.

Linseed	ton	21/0/0 21/5/0
Cocoanut, Cochin		24/0/0 24/10/0
Do. Ceylon		22/10/0 0/0/0
Palm, Lagos		22/0/0 0/0/0
Rapeseed, English pale		22 5/0 22/10/0
Do. brown		20 15/0 21/0/0
Cottonseed ref.		17/10/0 18/0/0
Oleine		20/10/0 21/10/0
Lubricating, U.S.		5/0/0 8/3/0
Do. black		4/6/0 6/3/0
TAR—Stockholm	barrel	1/0/0 1/0/6
Archangel		0/15/6 0/0/0

TENDERS.

[Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than* 10 *a.m. on Thursdays.*]

ABERDEEN.—For the execution of sewerage works, Jasmine-terrace and Market-street, for the Town Council. Mr. Wm. Dyack, Burgh Surveyor, Town House, Aberdeen:—

Jasmine-terrace.

Gall & Walker, Richmond-street £363 0 0

Market-street.

John Bain, 70, Dee-street £84 15 3

BARNSLEY.—Accepted for additions, &c., to school buildings, Old Town, for the School Board. Messrs. Senior & Clegg, architects, 15, Regent-street, Barnsley. Quantities by architects:—

Masonry.—John Taylor, Barnsley £537 12
Joinery.—James Smith, Gawber, near Barnsley 332 0
Plumbing.—S. Rushforth, Barnsley 49 0
Plastering.—C. Dryden, Barnsley 32 0
Slating.—E. Fleming, Barnsley 83 0
Painting.—W. Beaumont, Barnsley 14 0

BEDFORD.—Accepted for the supply of 2,000 tons broken granite for the Urban Sanitary Authority:—
Narborough and Enderby Granite Co., Narborough, near Leicester ..... 8s. 6d. per ton.

BEXLEY.—Accepted for supply of pipes, &c., for the Bexley Urban District Council. Mr. Reeves Bouties, Surveyor:—
Thomas Magg & Sons, Swadlincote—

	Delivered free in Van Loads within the District.	Delivered free in Truck Loads at either of the Railway-stations within the District.
	s. d.	s. d.
4-in. pipes, 24-in. long, with Stanford's patent joint, at per ft.	0 5	0 4½
6-in. " " " "	0 7	0 6½
9-in. " " " "	0 11½	0 10½
12-in. " " " "	1 5½	1 5
15-in. " " " "	2 4½	2 3½
18-in. " " " "	3 6½	3 4½
4-in. bends and junctions, with Stanford's patent joint, at per ft.	0 10	0 9½
6-in. " " " "	1 2	1 1½
9-in. " " " "	1 1.½	1 9½
12-in. " " " "	2 10½	2 10
15-in. " " " "	4 9	4 6½
18-in. " " " "	7 1	6 8½
4-in. salt glazed channel pipes, 24-in. long, each	0 4½	0 4
6-in. " " " "	0 6½	0 6
9-in. " " " "	0 13	0 9½
12-in. " " " "	1 5	1 4
15-in. " " " "	2 5	2 3½
18-in. " " " "	3 8	3 6

	4-in.	6-in.	4-in.	6-in.
	s. d	s. d.	s. d.	s. d.
Beancliff intersecting trap, 4-in. & 6-in., with Stanford's joint ..	5 9½	8 5	5 6	8 0

BEXLEY HEATH.—Accepted for reinstating two villa residences after fire, for the Law, Union, and Crown Fire and Life Assurance Co. Mr. W. Clinch, surveyor:—
Multon & Wallis £653

BOURNEMOUTH.—For making-up Cecil- and Horace-roads, Boscombe, for the Corporation. Mr. F. W. Lacey, Borough Engineer, Town Hall, Bournemouth:—

W. H. Saunders & Co. £373 14 0	George Troke, Winton, Bournemouth (accepted) .. £356 19 2½
S. J. Alsford 370 0 0	

BOURNEMOUTH.—For the making-up of Firs-terrace and other paths with asphalte and tar paving, for the Corporation. Mr. F. W. Lacey, Borough Surveyor, Bournemouth:—
Asphaltic Limestone Concrete Co., Ltd., Queen Victoria-street, E.C. (accepted) £171 18 0
The Mendip Granite and Asphalte Co. (for part of work only) 82 16 4

BRIDLINGTON (Yorks.).—For the erection of a residence, for the Wesleyan Chapel Trustees. Mr. J. Earnshaw, architect, Carlton House, Bridlington Quay:—

J. Rennard £327 10	R. Bailey £301 2
J. H. Hudson 318 0	J. Sawdon* 269 0

All of Bridlington Quay.]
* Accepted.

CARLISLE.—Accepted for additions to the Viaduct Temperance Hotel. Messrs. Moffat & Bentley, architects, Whitehaven:—
Masonry and Bricklaying.—John Laing, Carlisle
Slating.—Charles J. Nanson, Carlisle
Plastering.—R. Ormerod & Son, Carlisle
Carpentry and Joinery.—R. Beaty, Carlisle } £3,300 5 11
Plumbing, Electric Bells, and Gasfitting.—Hy. Fisher & Co., Cockermouth
Painting and Glazing.—Nelson & Son, Carlisle

CROMER.—Accepted for road-making, sewers, &c., at Cromer, Norfolk. Mr. A. F. Scott, surveyor, Norfolk:—
B. Cook & Co., Battersea £2,000

DARENTH.—For the erection of school buildings for the Darenth School Board. Mr. F. M. Kirby, architect:—

Miskin £2,070	Somford & Son £1,949
Young 2,040	Trueman & Son 1,840
Carter 2,026	Multon & Wallis* 1,788
Gray 2,018	J. Wilford† 1,666

* Accepted. † Withdrawn.

GRAVESEND.—Accepted for re-building house and studio, Manor-road, for Mr. J. N. Willis. Mr. J. Gould, architect:—
Multon & Wallis £475

HANLEY (Staffordshire).—For new school at Cauldon-road, for the Hanley School Board. Messrs. R. Scrivener & Sons, architects, Hanley:—

Whitfield £3,959 0	Cornes £3,775 0
Godwin 3 935 11	Cooke 3.690 0
Bennett 3,858 0	Ellis, Hanley* 3 680 0
Bagnall 3,791 10	

* Accepted.

HARROW.—Accepted for the erection of new offices, meter-house, &c., at the Harrow Gasworks, Harrow. Mr. J. L. Chapman, engineer. Messrs. Cowell & Gray, surveyors:—
A. A. Webber £1,050

HINCKLEY.—For the supply of 970 tons of broken granite, for the Rural District Council. Mr. W. D. Bennett, Surveyor, Barwell, Hinckley:—

	s. d.	
Earl Shilton Parish Council ..	7 9	per ton, about 400 tons.
Enderby & Stoney Stanton Granite Co.	5 9	average per ton, 600 ton

LONDON.—For the execution of paving works, asphalte, &c., for the Vestry of St. Margaret and St. John, Westminster. Mr. G. K. W. Wheeler, Surveyor, Town Hall, Caxton-street, Westminster, S.W.:—

	Compressed Asphalte, 1-in. thick, on 3 in. of Concrete.	Compressed Asphalte, ¾-in. thick, on 3 in of Concrete.	Mastic Asphalte, 1-in. thick, on 3 in. of Concrete.	Mastic Asphalte, ¾-in. thick, on 3 in. of Concrete.	Mastic Asphalte, ¼-in. thick, overlaid with Compressed Asphalte, ¾-in. thick, on 3 in. of Concrete.	Compressed Asphalte, 1¼-in. thick, on 6 in. of Concrete.	Compressed Asphalte, 2-in. thick, on 6 in. of Concrete.
	At per yard super.	At per yard super.	At per yard super.	At per yard super.	At per yard super.	At per yard super.	At per yard super.
	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
Limmer Asphalte Paving Co., Ltd. (accepted)	6 3	5 6	6 6	5 9	6 6	11 3	12 3
French Asphalte Co.	6 6	5 9	6 6	5 9	7 0	10 6	13 0
Val de Travers Asphalte Paving Co., Ltd.	6 6	5 9	6 6	6 0	7 0	10 6	12 6

LONDON.—For the execution of road-making and paving works, Verbena-gardens, for the Hammersmith Vestry. Mr. H. Mair, C.E., Vestry Hall, Broadway, Hammersmith, W.:—

	Verbena-gardens, Section No. 1.	Verbena-gardens, Section No. 2.	Bradmore Park-road.	Church-road.
Rogers & Co.	£293 0	£256 0 0	£143	£96
Wimpey & Co.	278 0	260 0 0	124	80
Nowell & Robson, Kensington (accepted)	239 0	262 0 0	110	55
Geo. Lee	298 16	304 18 9	—	—
H. J. Greenham	280 0	255 0 0	120	80
John Ball	287 0	277 0 0	—	—

HUCKNALL TORKARD (Notts).—For the execution of road-works for the Urban District Council. Mr. Wm. Swann, Surveyor, Council Offices, Hucknall Torkard. Quantities by Surveyor:—
Hawley & Son, Ilkeston £662

ILFORD.—For erecting a house in Clement's-road, Ilford, Essex, for Mr. W. E. Collins. Mr. F. G. Faunch, architect, St. Neots, Hunts.:—

Hearle & Farrow £425 0	North £395 0
G. J. Hosking 413 0	Walter 385 10

LEDBURY (Herefordshire.)—For alterations and additions to the "Biddulph Arms" Hotel, for Mr. Michael Biddulph, M.P. Mr. G. H. Godsell, architect, Hereford:—

Geo. Hill £488 5	D. Smith, Ledbury* £340 0

* Accepted.

LEDBURY (Herefordshire).—For the erection of a public hall at the Royal Oak Hotel, for Mr. E. H. Hopkins. Mr. G. H. Godsell, surveyor, Palace Chambers, Hereford:—

Lewis £1,317 9 4	Geo. Hill, Ledbury* £1,298 0 0
D. Smith 1,315 0 0	

For additional works to same.

Geo. Hill, Ledbury* £27

* Accepted.

LEEDS.—For the erection of school buildings, All Saints' Church, Pontefract-lane, for the Managers. Mr. J. M. Bottomley, architect, 46, Albion-street, Leeds. Quantities by the architect.—

For the whole of the work:

Joseph Bentley £2,763 11 6
Paul Rhodes 2,728 1 3
Wood & Airey 2,618 13 0

Accepted Tenders for the several departments of the Work:

Excavating, Bricklaying, and Masonry.—
Wood & Airey 1,249 17 11
Carpentry and Ironwork.—Paul Rhodes 678 0 0
Slating.—Wm. Atkinson 106 16 0
Cementing.—Wm. Pennington 136 0 0
Plumbing and Glazing.—Geo. Thompson 297 0 0
Painting.—R. J. Horsman 39 4 0
Total 2,506 17 11

[All of Leeds.]

LEIGHTON.—For the erection of new farm buildings at Rislip Farm, Soulbury, for Mr. Percy Lovett. Mr. J. T. Lawrence, architect, Leighton, Beds. Quantities by the architect:—

T. H. Coleman £547	Tutt Bros. £469
Webster & Cannon 493	Edwards Bros. 467
G. Garside & Son 484	D. Cock & Sons 464

LONDON.—For rebuilding No. 12, Great Castle-street, Oxford street, W. Mr. T. H. Smith, architect:—

Bash & Sons £3,300	Kearley £2,869
Patman & Fotheringham 2,999	Anley 2,762
Nightingale 2,955	A. A. Webber 2,733
Saunders 2,876	H. L. Holloway 2,720

LONDON.—For rebuilding No. 26, Castle-street east, W. Mr. A. J. Hopkins, architect and surveyor:—

Thos. Boyce £2,340	Beer & Gash £2,074
Patman & Fotheringham.. 2,262	A. A. Webber (accepted) . 2,033
Kearley 2,164	Hatfield & Son 1,409

LONDON.—For rebuilding No. 3, Market-place, Oxford-street. Mr. H. J. Hollingsworth, architect, 67, Claremont-road, Forest Gate:—

Gregar & Son £2,493	Courtnay & Fairbairn £2,059
Hall, Bedall, & Co. 2,456	Anley 2,016
Lawrence & Sons 2,211	Everard 1,587
A. A. Webber 2,193	

LONDON.—For additional story, &c., to No. 14, Campden Hill-road, W. Mr. W. Batting, architect:—

Andrews £359 0 0	A. A. Webber £333 10 0
Galpin 335 2 10	

LONDON.—For exterior painting to the Holden-street Board School, for the School Board for London:—

Holloway Bros. £393	Brown £245
Lathey Bros. 371	Peacock 237
Flood 284	R. E. Williams & Sons 210
Garrett & Sons 265	Trigg 195
Girling 263	Tucker (accepted) 194

LONDON.—For exterior painting to the Tennyson-road Board School, for the School Board for London:—

Lathey Bros. £329	B. E. Nightingale £210
Holloway 323	R. E. Williams & Sons 190
Girling 298	Trigg* 167
Peacock 243	

* Accepted.

LONDON.—For exterior painting at the Latchmere-street Schools, for the School Board for London:—

Rice & Sons £489 0	R. E. Williams & Sons .. £139 0
Stimpson & Co. 274 0	W. Hammond 130 10
Holliday 163 0	Trigg* 125 0
Tucker 159 0	

* Accepted.

LONDON.—For forming roads, laying out and draining a recreation-ground, at the North-Eastern Hospital, Tottenham, for the Metropolitan Asylums Board. Messrs. A. & C. Harston, architects, 15, Leadenhall-street, E.C.:—

Leslie & Co. £1,125 0	J. E. Bloomfield £739 15
Ballard, Ltd. 917 0	W. Nicholls 785 0
W. Holmes 857 10	T. Adams 745 0
Neal & Co. 837 0	H. Crane 724 0
S. Hipwell 820 0	G. Bell 663 0
G. Osenton 812 0	A. T. Catley, 23, Lloyd-square, W.C. (accepted) 600 0
J. Bowles 800 0	

LONDON.—For alterations, repairs, and decorations to No. 207, Romford-road, Stratford, E., for the Rev. A. Armitage. Messrs. H. Ough & Son, architects, 84, St. Paul's Churchyard, E.C.:—

G. J. Hosking £668	Spiers & Son £645

LONDON.—For the erection of an ambulance nurses' block and coachhouses, at the Eastern Ambulance Station, Homerton, for the Metropolitan Asylums Board. Messrs. A. & C. Harston, architects, 15, Leadenhall-street, E.C. Quantities by Messrs. Fowler & Hugman:—

C. Cox £3,140	W. Johnson & Co., Ltd. ..£2,475
G. E. Todd 2,700	Leslie & Co., Ltd., Kensington-square, W.* 2,421
Jarvis & Son 2,652	

* Accepted.

LONDON.—For pulling down and rebuilding No. 27, Rodney-street, Pentonville, N., for Mr. Eady. Mr. G. Baxter, architect:—

Barlow & Roberts .. £1,434 0 0	Hancock £1,189 17 5
A. White & Co. 1,429 0 0	Hunt 1,152 0 0

LONDON.—For repairs, &c., at the Marylebone Almshouses, St. John's Wood:—

H. Miller £395 0	W. Melbourne £197 10
Densham & Sons 215 0	Tavener & Son 195 0
Tinson 203 10	

LONDON.—For the erection of first part of St. Mark's Church, Plumstead Common, for the Rev. Albert Baillie. Mr. R. J. Lovell, architect, 46, Queen Victoria-street, E.C. Quantities by Mr. Jas. Kennedy, 31, Great James-street, Bedford-row, W.C.:—

Simpson & Sons £3,993	L. H. & R. Roberts £3,472
Jerrard & Sons 3,583	E. Proctor 3,455

LONDON.—For painting, &c., the exterior of the Lewisham Bridge Schools, for the London School Board:—

W. Banks £119 14 6	W. Akers & Co. £78 0 0
E. Procter 97 0 0	H. Leney 77 3 0
Couchman & Co. 86 11 0	Jones & Gores 70 5 0
Mid-Kent Building and Contracting Works 79 0 0	A. Brett (accepted) 73 0 0

LONDON.—For building stables and coach-house at Cole-street, Southwark, for the Honourable the Trinity Corporation. Messrs. Jarvis & Son, architects:—

W. Downs £966 0	Courtnay & Fairband .. £900 6
Faulkner 950 0	Henry Leney, Penge* .. 899 0
Parker 922 0	

* Accepted.

LONDON.—For alterations to the "Thicket Hotel," Anerley-road, Anerley, for Mr. G. Hutchison:—

Josolyne & Young £176	Henry Leney, Penge £143

LONDON.—For the completion of house, Stanger-road, South Norwood, for Mrs. Price:—

Hockenden £472	Henry Leney, Penge £465

LONDONDERRY.—Accepted for additions to St. Eugene's Cathedral school buildings. Mr. E. J. Toye, architect, Strand, Londonderry:—
Danl. Gilespie, Society-street, Londonderry £2,100

LONGRIDGE (Lancs.).—Accepted for the construction of 2,500 yards earthenware pipe sewers, for the District Council. Mr. Theo. S. McCallum, C.E., 4, Chapel Walks, Manchester:—
John Sharples, Accrington £2,312 10 3

MORPETH.—Accepted for the erection of a villa-residence at Morpeth, for Mr. John Paton. Mr. Geo. Reavell, junr., architect, Alnwick:—

	For House.	For Boundary Wall.
R. Carse & Son, builders, Amble	£1,209 10	£109

MOTTINGHAM (Kent).—For building five houses at Mottingham, near Eltham, Kent. Messrs. Logsdail & Beale, architects and surveyors, New Eltham, S.E.:—

Toms £3,275	Rider & Son £2,465
Larke & Sons 2,870	A. A. Webber 2,300
Jerrard & Son 2,700	

NANTYGLO (Mon.).—For additions to school buildings, Garnvach, for the Aberystruth School Board. Mr. Geo. Rosser, architect, Victoria-buildings. Quantities by Mr. R. L. Roberts, Newbridge, Abercarn, Mon.:—

A. Richards £1,285 0	Davies Bros. £1,000 0
G. H. Wilkins 1,178 0	J. T. Morgan 950 0
Mr. E. C. Newby 1,149 0	Jno. Jenkins, Brynmawr* (accepted) .. 862 15
Hatherley & Carr 1,095 0	

NOTTINGHAM.—For the construction of a new road at Bulwell, for the Corporation. Mr. Arthur Brown, C.E., Borough Engineer, Guildhall, Nottingham :—

J. H. Vickers	£9,200 0 0	Logan & Heming-way, Mansfield-rd., Nottingham*	£7,709 4 0
Baker & Sons	8,955 17 5		
J. Hawley & Son	8,171 11 5		
J. Tomlinson	7,950 0 0	Hodson & Sons†	6,900 0 0
Thos. Smart	7,825 0 0		

* Accepted. † Withdrawn.

OSWESTRY.—For the erection of four houses, Ferrers-road, for Mr. Tom Leeke. Mr. F. H. Shayler, architect, 33, Willow-street, Oswestry :—

Howells	£1,846 6 0	W. H. Thomas	£1,393 10 6
E. Davies	1,759 0 0	Evans & Felton, Oswestry*	1,389 10 0
W. W. Southern	1,500 0 0		

* Accepted.

PENZANCE.—For the construction of a sea-wall at the western promenade, for the Corporation. Mr. George H. Small, Borough Surveyor, Public Buildings, Penzance :—

J. Shaddock	£13,500	Geo. Shellabear	£10,200
W. H. Stephens	11,675	A. Carkeek, Redruth*	9,866
J. C. & T. A. Lang	10,600		

* Accepted.

PENZANCE.—For additions to Wesleyan school. Mr. J. W. Trounson, architect, 27, Clarence-street, Penzance :—

Burnet & Trounson	£674 17 6	Trounson & Trythais, Belgravia - street, Penzance (accepted)	£634 0 0
Burnet & Son	648 10 0		
Rd. Walters	654 12 6		
Ford & Son	612 14 0		

PORTISHEAD (Somersetshire).—For the construction of about eight miles of sewers, sea-outfall, engine-house, cottages, and the supply and erection of gas-engines, air-compressing machinery, &c. Mr. T. J. Moss Flower, C.E., Engineer, Carlton Chambers, Bristol :—

Contract No. 1.

Thomas & Webb	£19,400 0	Lynton & Co.	£15,961 3
A. J. Beaven	18,500 0	J. & T. Binns	14,401 8
G. Double	17,790 0	G. H. Wilkins, Bristol*	13,800 0
R. Neal	16,682 0		

* Accepted subject to modifications.

Contract No. 2.—15-in. Cast-iron Pipes.

	Per Ton.		Per Ton.
Clay Cross Co.	£12 10 0	J. Spittle	£5 2 6
Cochrane & Co.	7 0 0	J. Spittle (special pipe)	5 0 6
Exrs. of Chas. Jordan	6 10 0	Macfarlane, Strang, & Co.	5 3 0
Stanton Iron Co.	5 17 6	J. & S. Roberts, West Bromwich*	4 17 6
Stewart & Co.	5 11 6		
Stewart & Co. (special pipe)	5 4 0		

* Accepted.

Contract No. 3.—Ventilating Columns.

	21 ft.	25 ft.
Exrs. of Chas. Jordan	£21 0 0	£25 0 0
Ardrossan Co.	16 5 0	17 0 0
Blackwall Iron Co.	12 12 0	13 5 0
Macfarlane & Co.	9 11 0	10 5 0
Blakeborough & Sons	7 10 0	8 0 0
Hetherton Ironworks Co.	7 10 0	7 15 0
Cochrane & Co.	7 0 0	7 5 0
Geirson & Co.	6 12 6	6 17 6
Bristol Wagon-works Co.	5 15 0	6 5 0
J. & S. Roberts	5 8 0	5 12 0
Parsons & Sons, Pewsnett*	4 17 6	5 5 0
" " (special)	4 10 6	4 17 6

* Accepted.

Contract No. 4.—Ventilators.

	Inlet. s. d.	Outlet. s. d.
W. Barter, London*	13 6	13 6
Baird, Thompson, & Co., London*	12 0	22 0
J. E. Ellison, Leeds*	13 0	10 0
J. Gibbs, Liverpool*	23 0	9 0
Blackwall Iron Co.	19 0	19 0
W. Larder (wire globes)	1 3	1 3

* Selected for trial.

PORTLAND.—For the supply of broken Guernsey granite for one year. Mr. E. J. Elford, Surveyor, Council Offices, Portland :—

	Broken Granite. 2 in. s. d.	1½ in. s. d.
John Mowlem & Co., Grosvenor Wharf, Westminster, S.W.*	10 0	10 0
William Griffiths	10 4	10 10
Rowe & Mitchell	12 0	12 6
Wm. Mair & Co.	10 5	10 11
R. C. Fennings	12 0	11 0

* Accepted.

SOUTHEND-ON-SEA.—For the execution of street works, St. Vincent's-road and others, for the Corporation. Mr. H. Harlock, Borough Surveyor, Clarence-road, Southend :—

	St. Vincent's-road. £ s. d.	Hamlet-road. £ s. d.	Prittlewell-path. £ s. d.
Geo. Wilson	760 0 0	127 12 0	184 13 0
Hobman & Co.	617 0 0	103 10 0	167 0 0
W. Griffiths	679 0 0	117 0 0	129 0 0
Fry Bros.	813 6 5	129 8 11	191 12 2
J. Jackson	666 0 0	119 0 0	160 0 0
E. Iles	614 0 0	107 0 0	147 0 0

SPALDING (Lincs.).—For the erection of offices and shop in the Sheep-market, for Mr. Banks. Mr. Wm. Jepson, architect, 11, St. Thomas'-road, Spalding :—

William Levesley	£565 10	C. A. Watson *	£490 0
J. W. Perkins	557 10		

* Accepted.

[All of Spalding].

STAINLAND (Yorks.).—Accepted for alterations, &c., to Providence Independent Chapel. Mr. B. Stocks, architect, St. Peter's-street, Huddersfield. Quantities by architect :—

Excavating and Masonry.—John Helliwell, Stainland	£267 0
Carpentry and Joinery.—Wood Bros., Huddersfield	1,060 0
Plumbing and Glazing.—S. & W. H. Jagger, Elland	84 19
Plastering.—S. Collins & Son, Stainland	98 0
Painting.—Lunn, Haigh, & Shaw, Huddersfield	83 19

WINTERBOURNE STEEPLETON (Dorset).—For the erection of school buildings. Mr. A. T. Griffith, architect, Great Malvern. Quantities supplied :—

	Playgrounds and Boundary Fences.
W. Fry & Son	£774 0 / £80 10
H. T. Atkins	633 12 / 97 12

WORKSOP.—For the execution of new street works, for Mr. Wm. Peck. Mr. John Allsop, C.E., Worksop :—

C. Ilett & Sons	£690 0 0	G. Eyre	£417 9 0
R. H. Rawson	499 0 0	C. Makin, Worksop *	410 0 0
J. A. Naiden	494 18 7	Cope & Rayner	352 18 9
J. H. Vickers	452 10 9		

* Accepted.

[Architect's estimate, £420.]

WOODFORD WELLS (Essex).—For the erection of fourteen cottages and repairs to eight others, for the Bow Brewery Co. Mr. A. S. Green, architect, 425, Seven Sisters-road, South Tottenham :—

Simpson & Cove	£4,684	Osborne & Son	£4,473
S. Goodall	4,530	Green & Smith (accepted)	4,248

Hot-water Apparatus, Fossdene-road Schools, Greenwich.—We are informed by Messrs. W. G. Cannon & Sons that their tender of £496 10s. for complete system of low-pressure hot-water apparatus at Fossdene-road Board Schools, Charlton-road, Greenwich, was accepted, and not the lowest, as stated in our last week's issue. The error was not ours.

TO CORRESPONDENTS.

"S. W. B."—W. & W.—S. S. P. (amount should have been stated).—T. M. (too late : next week).

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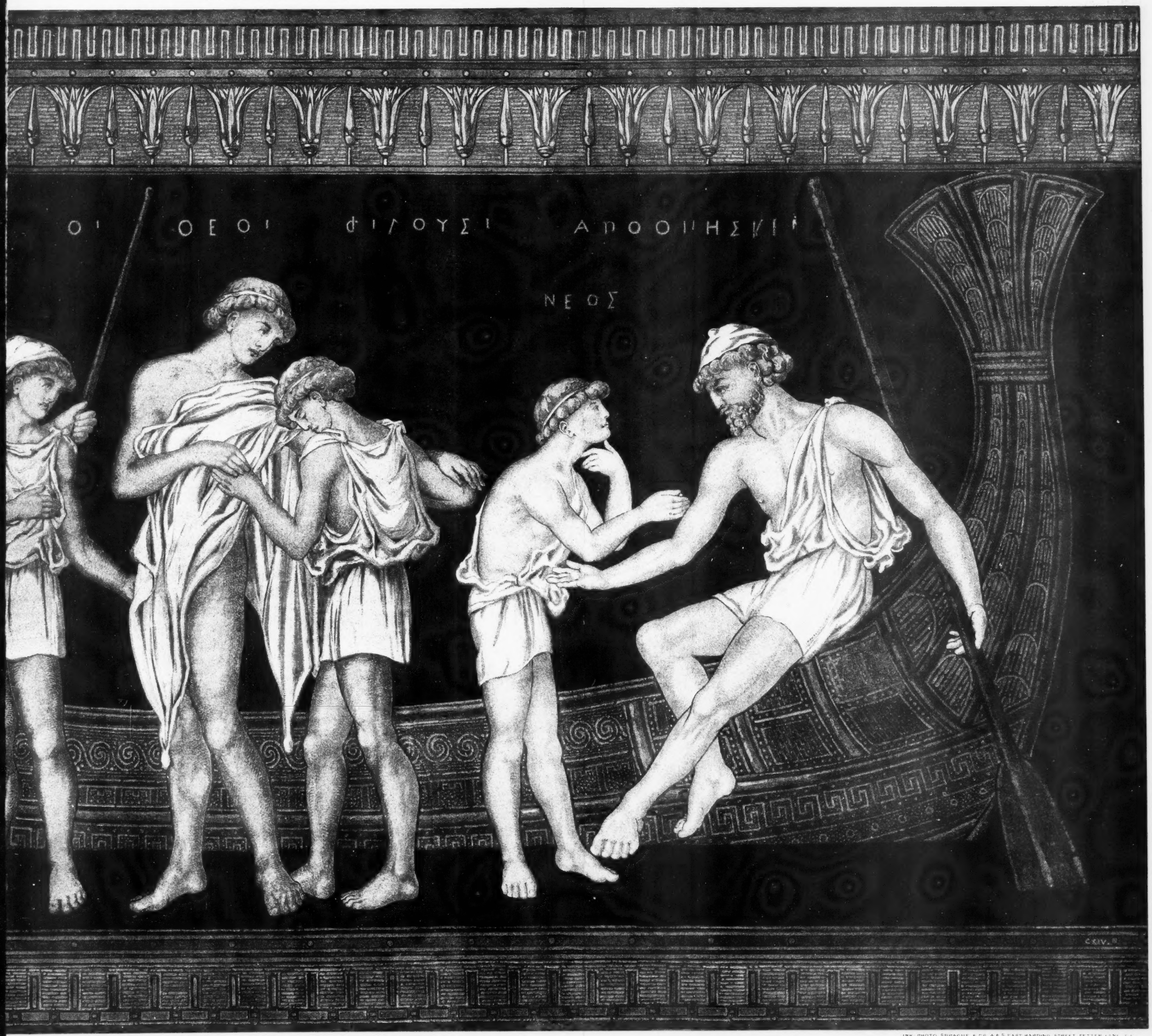
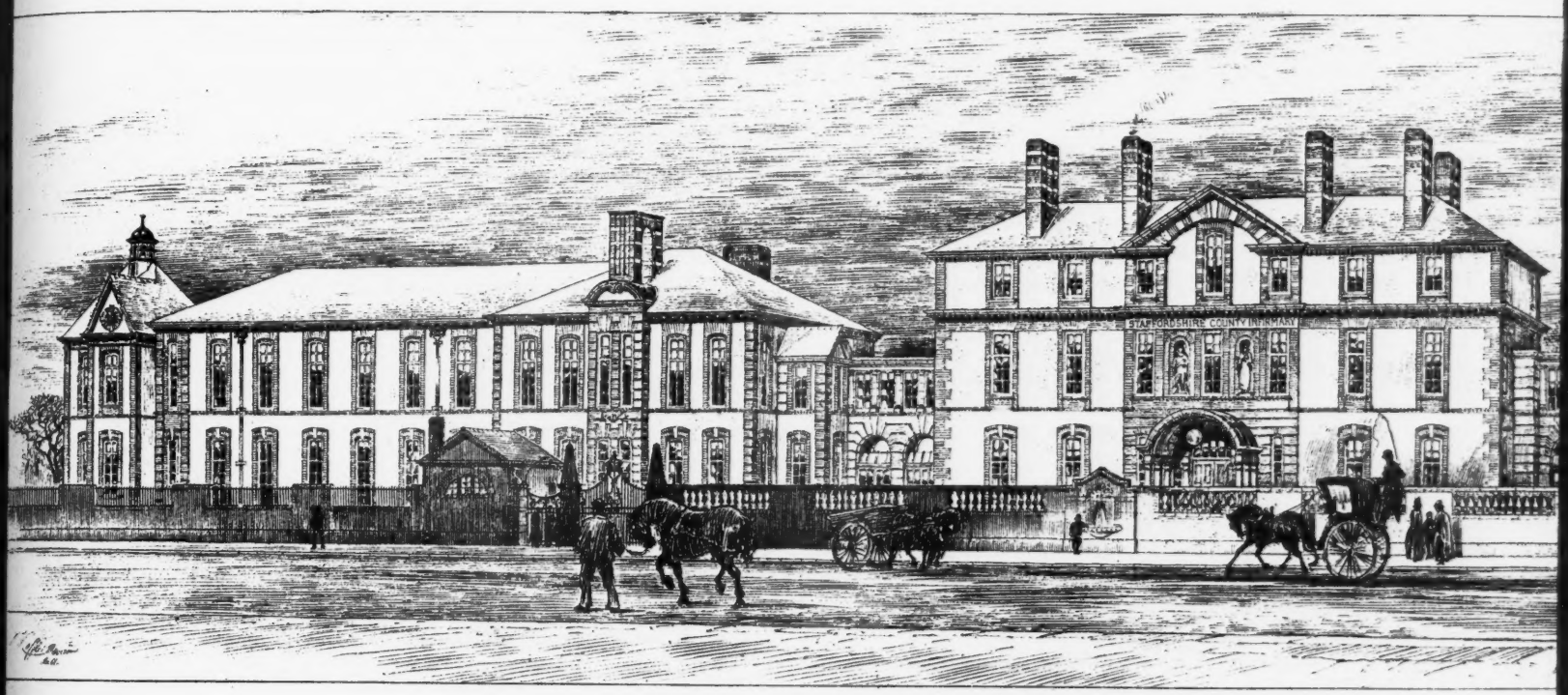
Royal Academy Exhibition

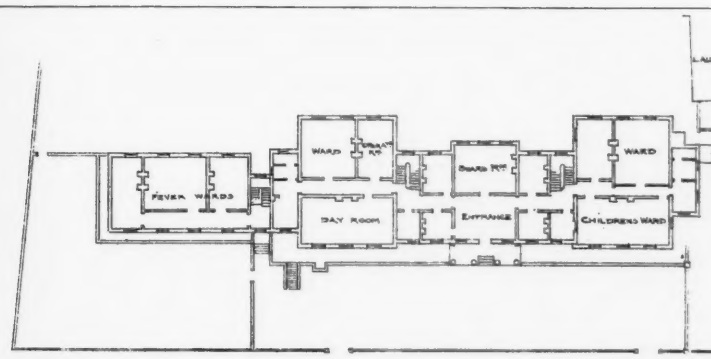
"HERMES



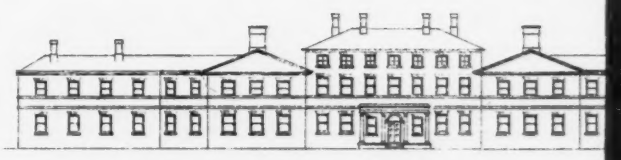
INK PHOTO SPRAGUE & Co 4 & 5 EAST HARDING STREET FETTER LANE E C

"HERMES PSYCHAGOGOS": FRIEZE-PANEL.—Designed by Mr. John Staines Babb.





— GROUND PLAN OF INFIRMARY BEFORE ALTERATIONS —



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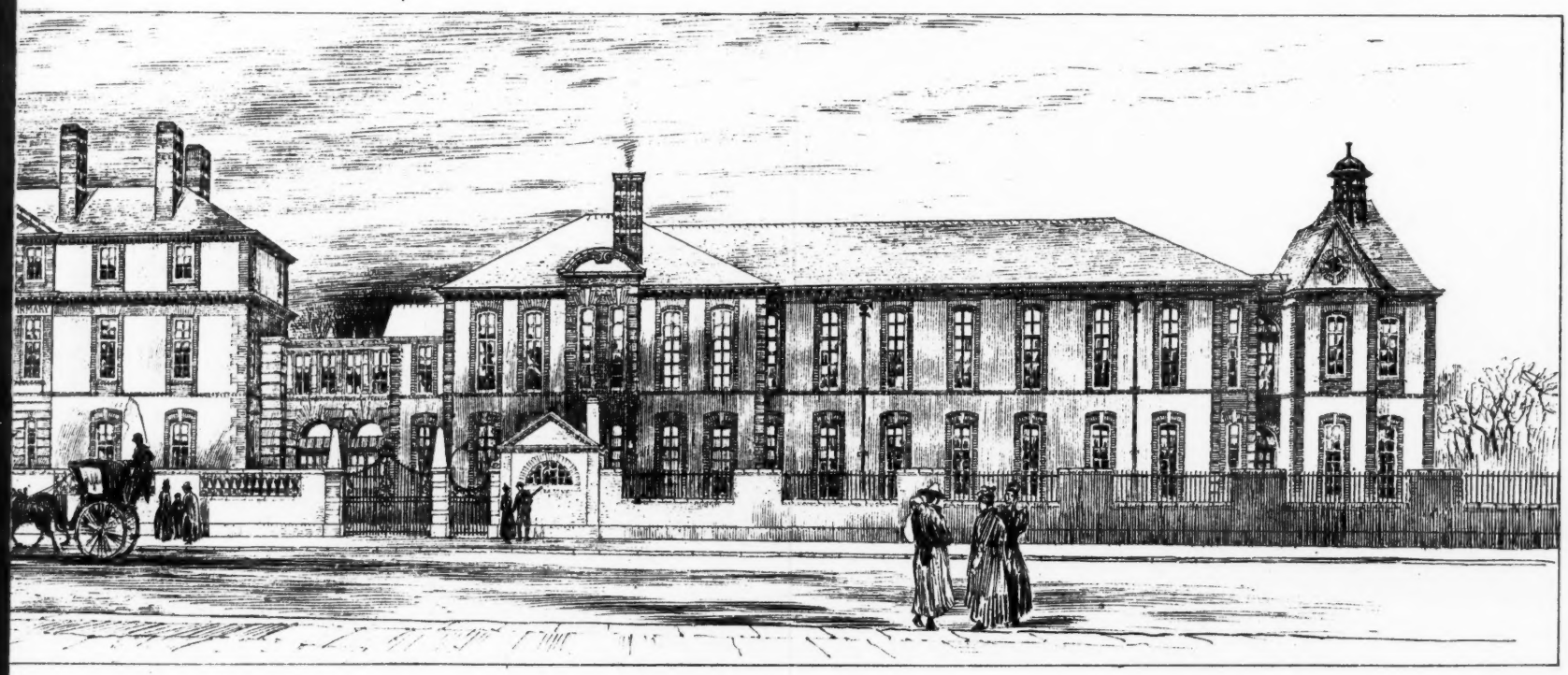
STAFFORD COUNTY INFIRMARY: AS REMODELLED.—M



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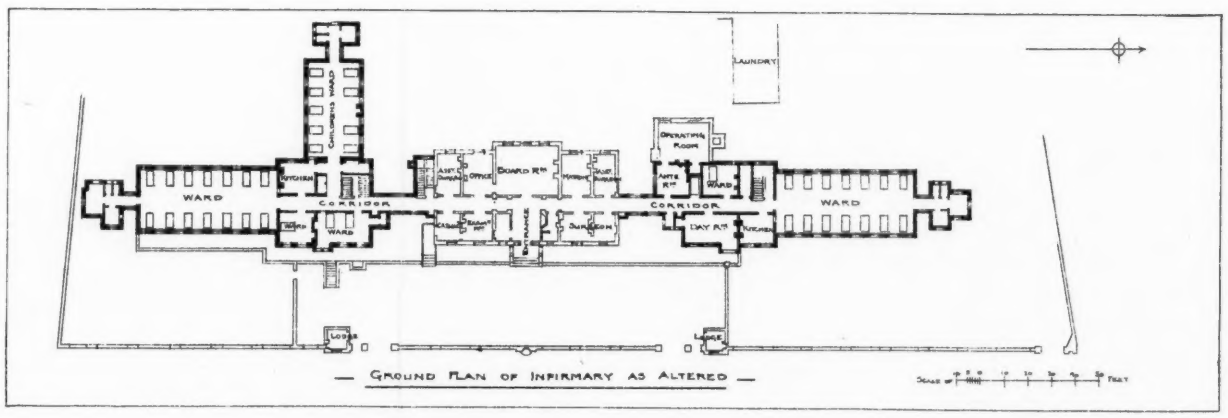

— GROUND PLAN OF INFIRMARY AS ALTERED —

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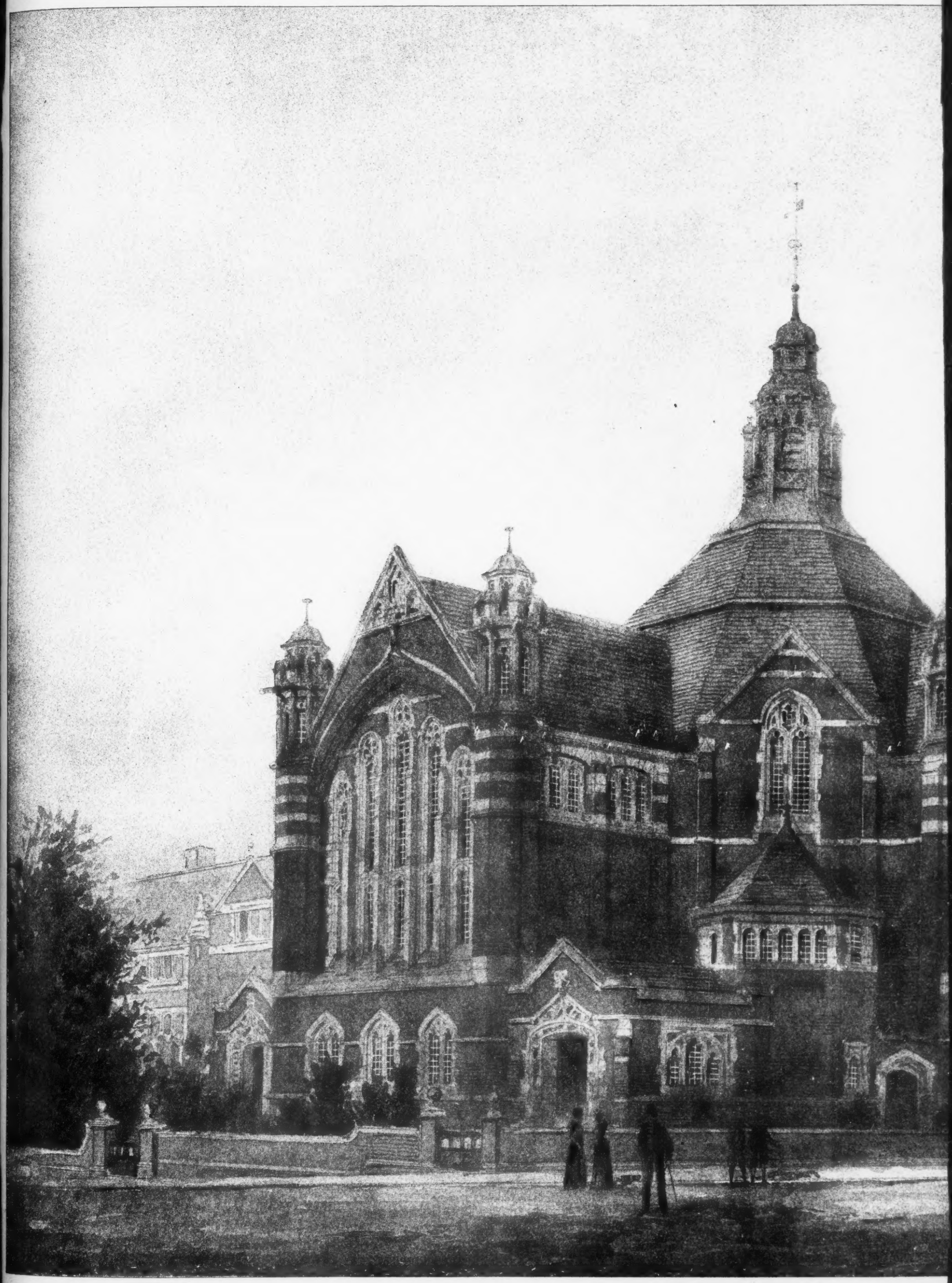
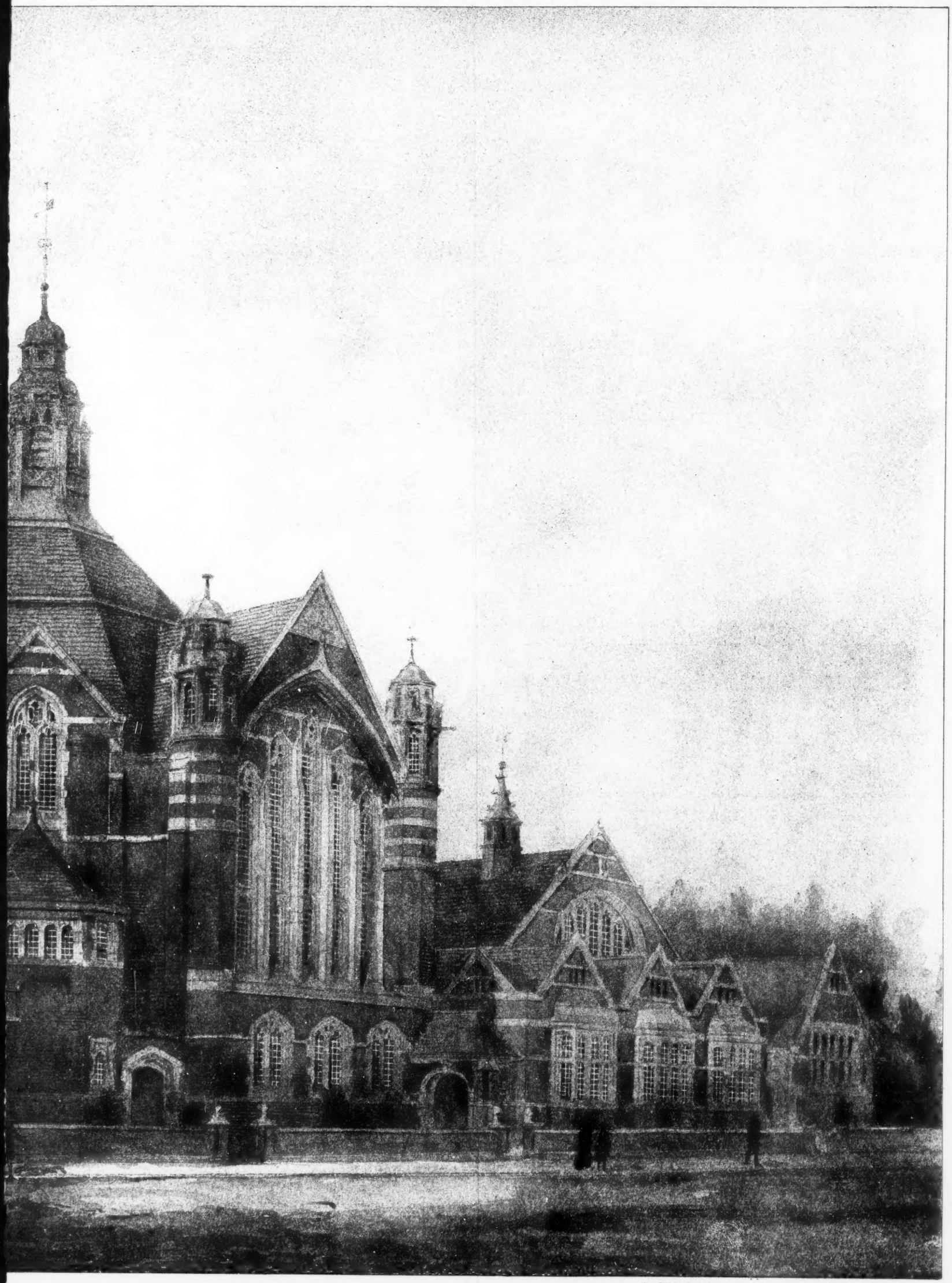
RY: AS REMODELLED.—MR. ASTON WEBB, F.R.I.B.A., ARCHITECT.



CONGREGATIONAL CHURCH, WEST HAMPSTEAD.—Messrs.



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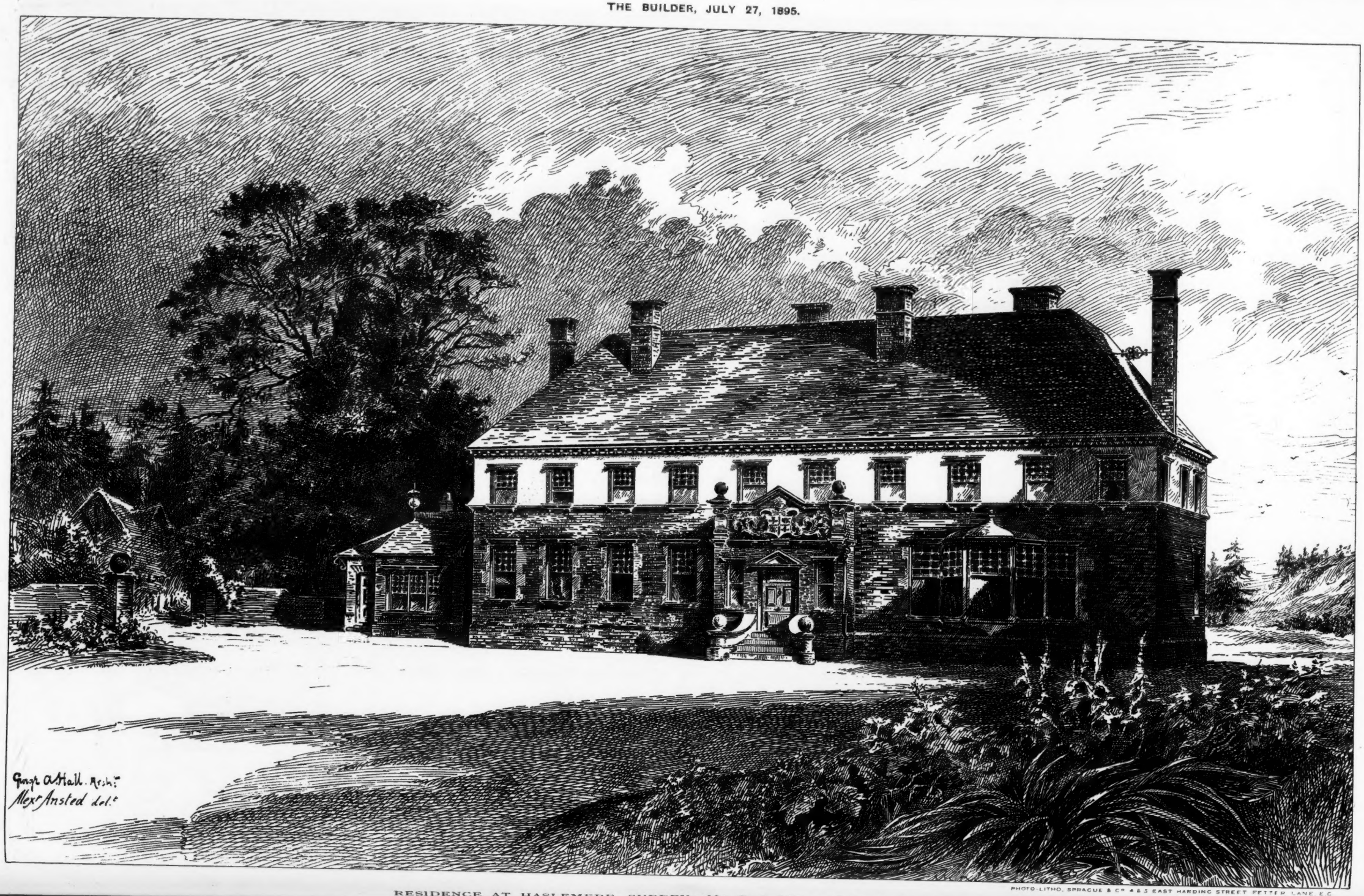
VEST HAMPSTEAD.—MESSRS. SPALDING & CROSS, ARCHITECTS.



RESIDENCE AT HASLEMERE, SURREY.—Mr. G. A. Hall, A.R.I.B.A., Architect.

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RESIDENCE AT HASLEMERE, SURREY.—Mr. G. A. Hall, A.R.I.B.A., Architect.

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